

# **Sun ZFS Storage 7x20 Appliance Installation Guide**



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# Contents

---

- Preface .....7**
- 1 Introduction .....9**
  - Overview .....9
  - Introduction .....9
- 2 Installation .....13**
  - Installation ..... 13
    - Introduction ..... 13
  - Overview ..... 14
    - Precautions ..... 14
    - Prerequisites ..... 14
    - Controller, Cabinet and Disk Shelf Installation Tasks ..... 15
  - 7x20 Controllers ..... 15
    - 7x20 Controller Installation Tasks ..... 15
    - Prerequisites ..... 16
    - Tools and Equipment Needed ..... 16
    - Tasks ..... 16
  - Sun Disk Shelf ..... 29
    - Precautions ..... 29
    - Prerequisites ..... 30
    - Tools and Equipment Needed ..... 30
    - Tasks ..... 31
  - Cabinet ..... 35
    - 7700 Cabinet Planning and Installation ..... 35
    - Site Planning Checklists ..... 43
    - Tasks ..... 47

<b>3 Cabling</b>	53
Cabling	53
Cabling Diagrams	53
7120 Cabling	54
Connecting Expansion Storage to the Sun ZFS Storage 7120	54
7320 Cabling	56
Connecting Expansion Storage to the Sun Storage 7320	56
7320 Cluster Cabling	59
Connecting Expansion Storage to the Sun Storage 7320 Cluster	59
7420 Cabling pt.1	62
Connecting Expansion Storage to the Sun Storage 7420 (2 HBAs)	62
7420 Cabling pt.2	66
Connecting Expansion Storage to the Sun Storage 7420 (3 HBAs)	66
7420 Cabling pt.3	71
Connecting Expansion Storage to the Sun Storage 7420 (4 HBAs)	71
7420 Cluster Cabling pt.1	74
Connecting Expansion Storage to the Sun Storage 7420 Cluster (2 HBAs)	74
7420 Cluster Cabling pt.2	79
Connecting Expansion Storage to the Sun Storage 7420 Cluster (3 HBAs)	79
7420 Cluster Cabling pt.3	85
Connecting Expansion Storage to the Sun Storage 7420 Cluster (4 HBAs)	85
7700 Cabling	90
Sun ZFS Storage 7700 SAS Cabling	90
 <b>4 Powering On and Configuring the System</b>	 91
Power	91
Powering On and Configuring the Appliance	91
Tasks	92
Next Steps	94
Initial	95
Initial Configuration	95
Prerequisites	95
Summary	95
BUI	96
CLI	96

**Glossary** ..... 103

**Index** ..... 107



# Preface

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The *Sun ZFS Storage 7x20 Appliance Installation Guide* contains installation, cabling and initial configuration documentation for Oracle's Sun ZFS Storage 7120, 7320, 7420 and 7700 NAS appliances.

This documentation is also available while using the appliance Browser User Interface (BUI), accessible via the Help button. The appliance documentation may be updated using the System Upgrade procedure documented in the System Service Manual.

## Who Should Use This Book

This guide is for users and system administrators who install and use the Sun ZFS Storage 7x20 NAS appliances.

## Related Documentation

Refer to the following documentation for administration information, hardware overviews, service procedures and software update notes.

- [Administration Guide, Analytics Guide and Service Manual](http://wikis.sun.com/display/fishworks/documentation/) (<http://wikis.sun.com/display/fishworks/documentation/>)
- [Release Notes](http://wikis.sun.com/display/fishworks/software+updates) (<http://wikis.sun.com/display/fishworks/software+updates>)

## Documentation, Support, and Training

The Sun web site provides information about the following additional resources:

- [Documentation](http://www.sun.com/documentation/) (<http://www.sun.com/documentation/>)
- [Support](http://www.sun.com/support/) (<http://www.sun.com/support/>)
- [Training](http://www.education.oracle.com) (<http://www.education.oracle.com>)





# Introduction

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## Overview



## Introduction

The Sun ZFS Storage 7000 family of products provide efficient file and block data services to clients over a network, and a rich set of data services that can be applied to the data stored on the system.

## Platforms

- 7120
- 7320
- 7420/7720
- 7700

Legacy platforms are documented in the 7110, 7210, 7310, 7410, J4400/J4500 sections of the Sun Storage 7000 Unified Storage System Service Manual available at <http://wikis.sun.com/display/fishworks>. (<http://wikis.sun.com/display/fishworks>.)

## Expansion Storage

- Sun Disk Shelf

## Protocols

Sun ZFS Storage appliances include support for a variety of industry-standard client protocols, including:

- SMB
- NFS
- HTTP and HTTPS
- WebDAV
- iSCSI
- FC
- SRP
- iSER
- FTP
- SFTP

## Key Features

Sun ZFS Storage systems also include new technologies to deliver the best storage price/performance and unprecedented observability of your workloads in production, including:

- Analytics, a system for dynamically observing the behavior of your system in real-time and viewing data graphically
- The ZFS Hybrid Storage Pool, composed of optional Flash-memory devices for acceleration of reads and writes, low-power, high-capacity disks, and DRAM memory, all managed transparently as a single data hierarchy

## Data Services

To manage the data that you export using these protocols, you can configure your Sun ZFS Storage system using the built-in collection of advanced data services, including:

- RAID-Z (RAID-5 and RAID-6), mirrored, and striped disk configurations
- Unlimited read-only and read-write snapshots, with snapshot schedules
- Data deduplication
- Built-in data compression
- Remote replication of data for disaster recovery
- Active-active clustering for high availability (7310, 7320, 7410, 7420, and 7720)
- Thin provisioning of iSCSI LUNs
- Virus scanning and quarantine
- NDMP backup and restore

## Availability

To maximize the availability of your data in production, Sun ZFS Storage appliances include a complete end-to-end architecture for data integrity, including redundancies at every level of the stack. Key features include:

- Predictive self-healing and diagnosis of all system hardware failures: CPUs, DRAM, I/O cards, disks, fans, power supplies
- ZFS end-to-end data checksums of all data and metadata, protecting data throughout the stack
- RAID-6 (double- and triple-parity) and optional RAID-6 across disk shelves
- Active-active clustering for high availability (7310, 7320, 7410, 7420, and 7720)
- Link aggregations and IP multipathing for network failure protection
- I/O Multipathing between the controller and disk shelves
- Integrated software restart of all system software services
- Phone-Home of telemetry for all software and hardware issues
- Lights-out Management of each system for remote power control and console access

## Browser User Interface (BUI)



The browser user interface

The BUI is the graphical tool for administration of the appliance. The BUI provides an intuitive environment for administration tasks, visualizing concepts, and analyzing performance data.

The management software is designed to be fully featured and functional on the following supported web browsers: Firefox 3.x, Internet Explorer 7 and 8, Safari 3.1 or later, and WebKit 525.13 or later.

Direct your browser to the system using either the *IP address* or *host name* you assigned to the NET-0 port during initial configuration as follows: `https://ipaddress:215` or `https://hostname:215`. The login screen appears.

The online help linked in the top right of the BUI is context-sensitive. For every top-level and second-level screen in the BUI, the associated help page appears when you click the Help button.

## Command Line Interface (CLI)

The CLI is designed to mirror the capabilities of the BUI, while also providing a powerful scripting environment for performing repetitive tasks. The following sections describe details of the CLI. When navigating through the CLI, there are two principles to be aware of:

- Tab completion is used extensively: if you are not sure what to type in any given context, pressing the Tab key will provide you with possible options. Throughout the documentation, pressing Tab is presented as the word "tab" in bold italics.
- Help is always available: the help command provides context-specific help. Help on a particular topic is available by specifying the topic as an argument to help, for example **help commands**. Available topics are displayed by tab-completing the help command, or by typing help topics.

You can combine these two principles, as follows:

```
dory:> help tab
builtins  commands  general  help      properties  script
```

# Installation

---

## Installation



## Introduction

This section addresses how to physically install the system chassis into a rack, connect controllers in a cluster, and expand storage. The following topics are described.

- Overview
- [7x20 controller installation tasks](#)
- [Sun Disk Shelf installation tasks](#)
- [7700 cabinet planning and installation tasks](#)
- Cabling
- Powering on the appliance
- Initial configuration

Refer to the following sections of the *Sun Storage 7000 Unified Storage System Installation Guide* for legacy platform installation instructions at <http://wikis.sun.com/display/fishworks>. (<http://wikis.sun.com/display/fishworks>.)

- 7x10 installation tasks
- J4400/J4500 Disk Shelf Installation

# Overview

## Precautions

Observe the following cautions when installing any Sun ZFS Storage 7x20 controller or cabinet.

- Always load equipment into a rack from the bottom up so that it will not become top-heavy and tip over. Deploy the anti-tip bar to prevent the rack from tipping during equipment installation.
- Ensure that the temperature in the rack does not exceed the controller's maximum ambient rated temperatures. Consider the total airflow requirements of all equipment installed in the rack to ensure that the equipment is operated within its specified temperature range.
- For best results, only qualified Sun service personnel should perform cluster installation and configuration. Contact Sun Service for assistance.

## Prerequisites

Refer to the Quick Setup poster that shipped with the product or the following hardware service sections located in the Sun ZFS Storage 7x20 Service Manual at <http://wikis.sun.com/display/fishworks> (<http://wikis.sun.com/display/fishworks>) for an overview of your system controller or cabinet.

- 7120 Overview - view component diagrams and specifications
- 7320 Overview - view component diagrams and specifications, and cluster options
- 7420/7720 Overview - view component diagrams, specifications, and cluster options
- 7700 Overview - view component diagrams and specifications

If you intend to install disk shelves into the same rack, refer to the Disk Shelf Installation section for how to install them into the bottom of your rack.

Legacy platform overviews are provided in the 7110 Overview, 7210 Overview, 7310 Overview, 7410 Overview sections of the Sun Storage 7000 Unified Storage Service Manual on <http://wikis.sun.com/display/fishworks>. (<http://wikis.sun.com/display/fishworks>.)

For controller installation, check that your rack is compatible with the slide rail and cable management assembly options as follows:

- The structure is a four-post rack with mounting at both front and back. Two-post racks are *not* compatible.
- The horizontal opening and unit vertical pitch conforms to ANSI/EIA 310-D-1992 or IEC 60927 standards.
- The distance between the front and back mounting planes is between 24 in and 36 in (610 mm to 915 mm).

- The distance to the front cabinet door, providing clearance depth in front of the front mounting plane, is at least 1 in (25.4 mm).
- The distance to the back cabinet door, providing clearance depth behind the front mounting plane, is at least 31.5 in (800 mm) with the cable management assembly, or 27.5 in (700 mm) without the cable management assembly.
- The distance between structural supports and cable troughs, providing clearance width between the front and back mounting planes, is at least 18 in (456 mm).

For cabinet installation, you will need a total distance of at least 15 ft/4.5 m for safe maneuvering when you roll the cabinet off the shipping pallet. **Caution** - Moving the 7700 cabinet off the pallet requires at least three people.

## Controller, Cabinet and Disk Shelf Installation Tasks

The following sections provide installation tasks with enumerated steps.

- [7x20 controller installation tasks](#)
- [Sun Disk Shelf installation tasks](#)
- [7700 cabinet planning and installation tasks](#)
- [7x10 controller installation tasks](#)

## 7x20 Controllers

### 7x20 Controller Installation Tasks

This section provides enumerated steps for installing the Sun ZFS Storage 7120, 7320 or 7420 controllers into a rack using the rail assembly in the rack mount kit. Note that if your rack mount kit shipped with installation instructions, use those instructions instead.

Observe the following cautions:

- Always load equipment into a rack from the bottom up so that it will not become top-heavy and tip over. Deploy the anti-tip bar to prevent the rack from tipping during equipment installation.
- Ensure that the temperature in the rack will not exceed the controller's maximum ambient rated temperatures. Consider the total airflow requirements of all equipment installed in the rack to ensure that the equipment is operated within its specified temperature range.

## Prerequisites

Refer to the Quick Setup poster that shipped with the product or the *Sun ZFS Storage Appliance Service Manual* located on <http://wikis.sun.com/display/fishworks> (<http://wikis.sun.com/display/fishworks>) for an overview of your controller.

- 7120 Overview - view component diagrams and specifications
- 7320 Overview - view component diagrams and specifications
- 7420/7720 Overview - view component diagrams and specifications

## Tools and Equipment Needed

To install the system, you need the following tools:

- No. 2 Phillips screwdriver
- ESD mat and grounding strap
- Pencil, stylus, or other pointed device, for pushing front panel buttons

You also need a system console device, such as one of the following:

- Sun workstation
- ASCII terminal
- Terminal server
- Patch panel connected to a terminal server

## Tasks

### 7x20 Controllers Tasks

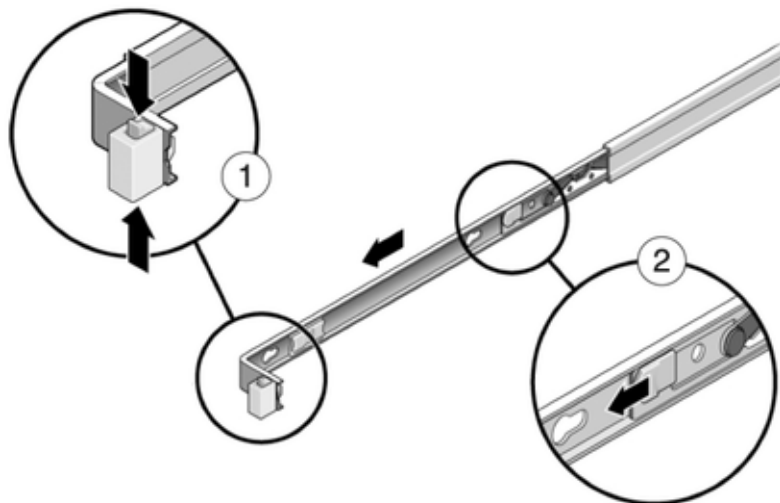
#### ▼ Installing Mounting Brackets on the Controller Chassis

If the mounting brackets are shipped inside the slide rails, you must remove them before beginning this procedure, as follows.

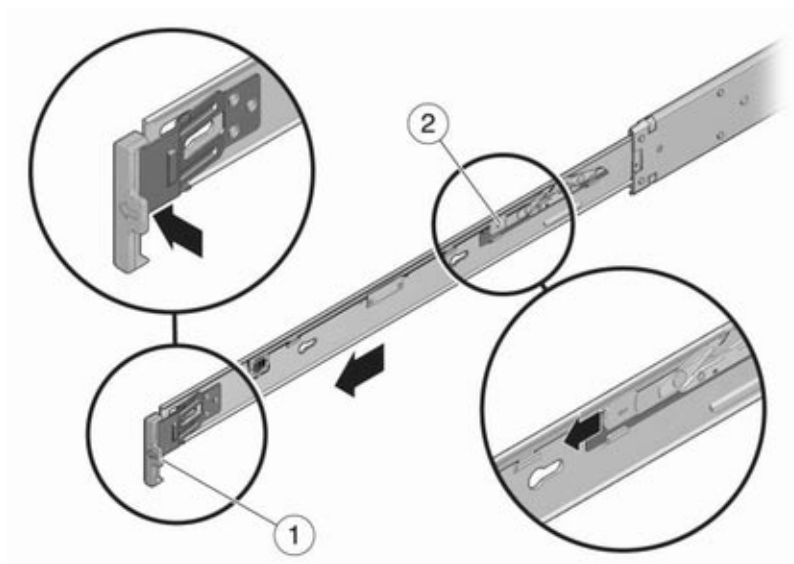
- Unpack the slide rails and locate the slide rail lock at the front of the assembly.
- Squeeze and hold the tabs at top and bottom of the lock (1) while you pull the mounting bracket out to the stop.
- Push the mounting bracket release button toward the front of the mounting bracket (2) while withdrawing the bracket from the assembly.

The following graphic illustrates the procedure for disassembling the 7120/7320 rail kit.



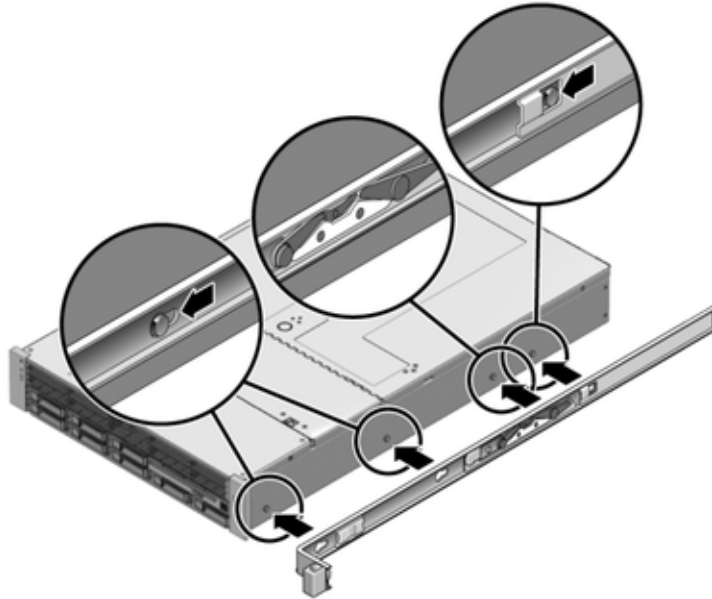


The following graphic illustrates the procedure for disassembling the 7420 rail kit.

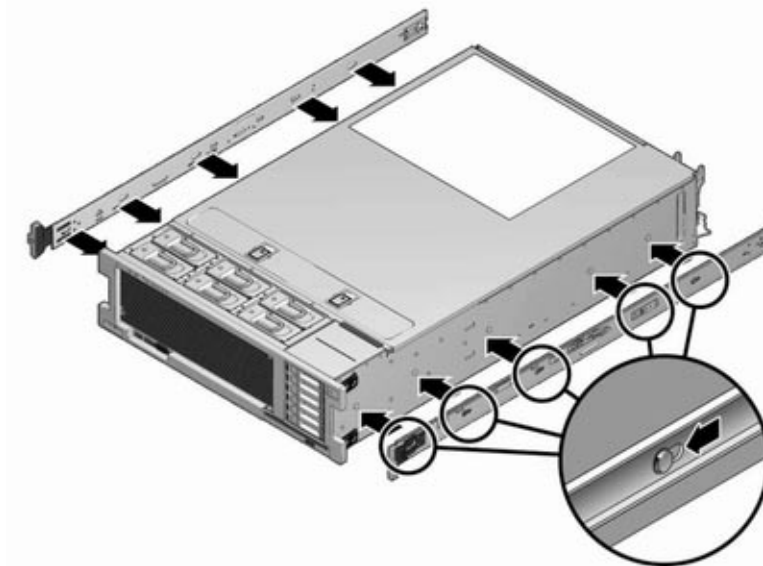


- 1 Position a mounting bracket against the chassis so that the slide rail lock is at the front of the chassis, and the keyed openings on the mounting bracket are aligned with the locating pins on the side of the chassis.

The following graphic illustrates how to attach the 7120/7320 mounting brackets.



The following graphic illustrates how to attach the 7420 mounting brackets.

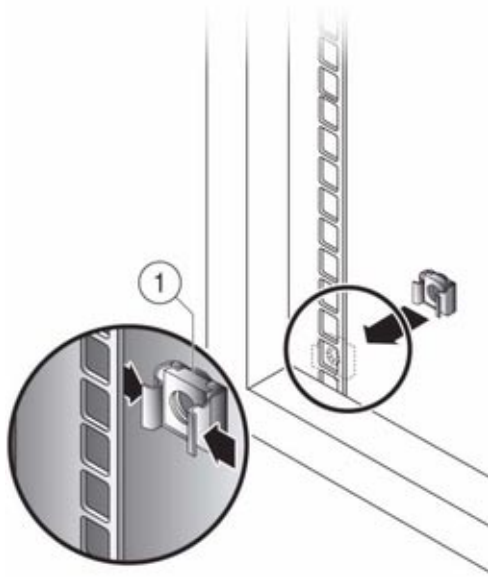


- 2 With the heads of the four chassis locating pins protruding through the four keyed openings in the mounting bracket, pull the mounting-bracket toward the front of the chassis until the mounting-bracket clip locks into place with an audible click.
- 3 Verify that all mounting pins are securely fastened to the chassis.
- 4 Repeat to install the remaining mounting bracket on the other side of the chassis.

### ▼ Installing the Controller Chassis into the Rack Slide Rails

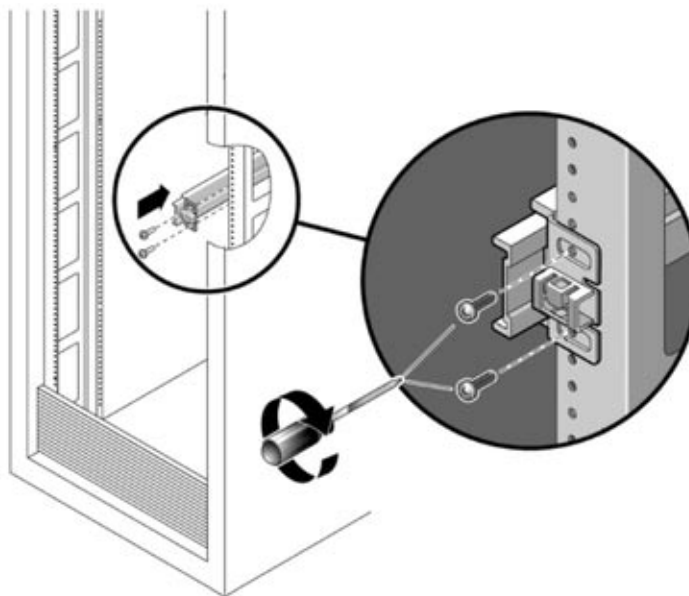
This procedure requires a minimum of two people because of the weight of the chassis. Attempting this procedure alone could result in equipment damage or personal injury. Always load equipment into rack from the bottom up.

- 1 If you are using a universal 19-inch cabinet, snap an M6 square cage nut into the top and bottom holes of the location where you will be installing the rail plate as shown.



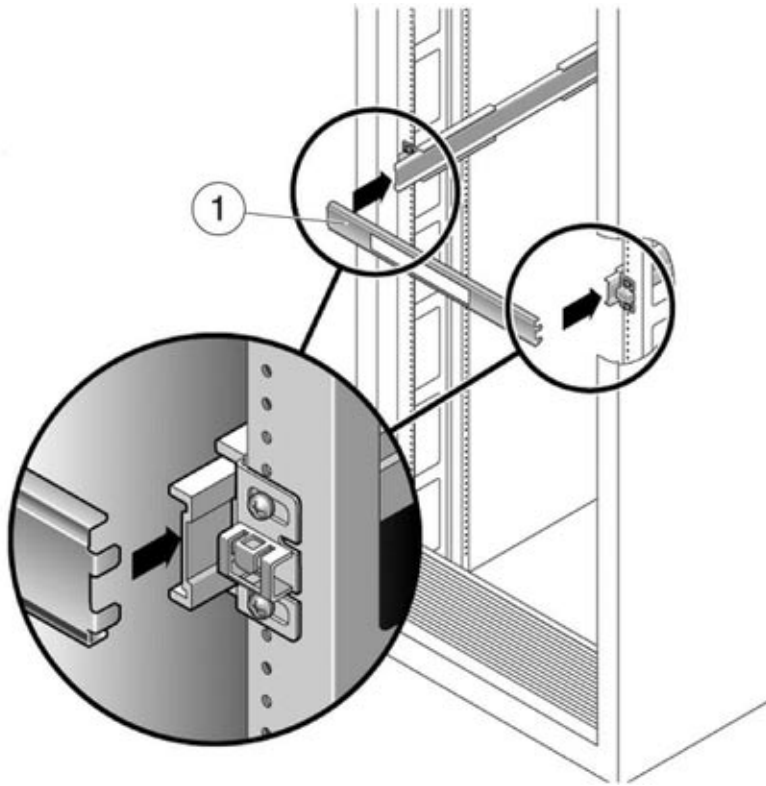
- 2 Position a slide rail assembly in your rack so that the brackets at each end of the slide rail assembly are on the outside of the front and back rack posts. The following graphic illustrates

the rail assembly brackets.



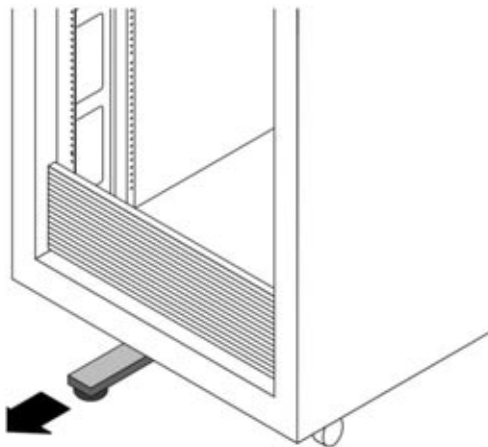
- 3 Attach each slide rail assembly to the rack posts, but do not tighten the screws completely.

- 4 From the front of the rack, set the proper width of the rails with the rail-width spacer (1).



- 5 Tighten the screws on the brackets.
- 6 Remove the spacer and confirm that the rails are attached tightly to the rack.

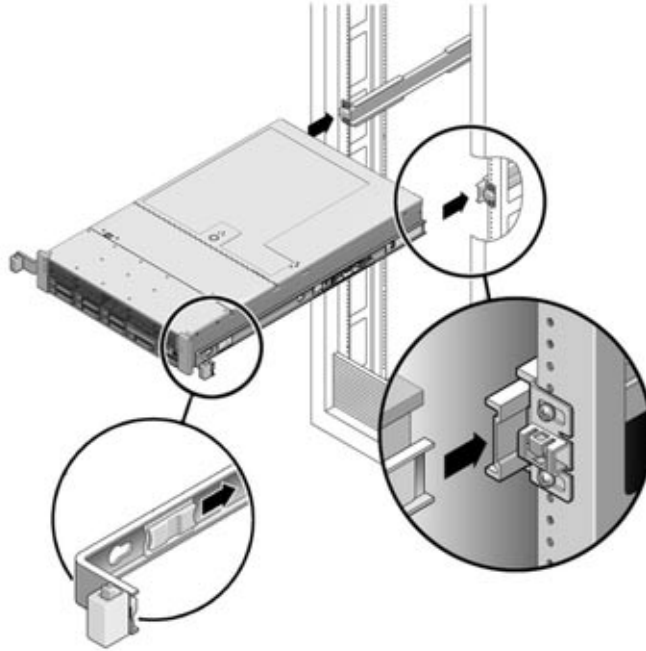
- 7** If your rack includes an anti-tip foot, extend it from the bottom of the rack.



- 8** Lower the rack stabilization feet if you have not already done so.
- 9** Push the slide rails into the slide rail assemblies in the rack as far as possible.

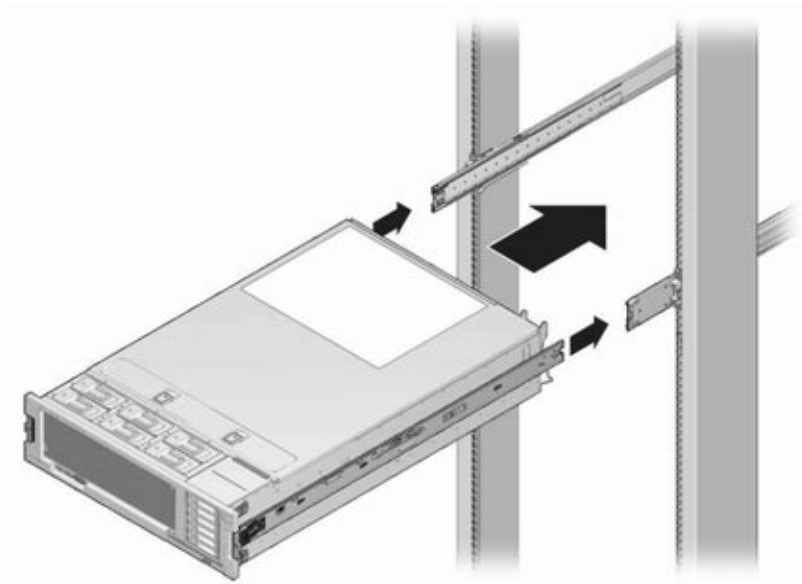
- 10 **Raise the chassis so that the back ends of the mounting brackets are aligned with the slide rail and insert the chassis into the slide rails, pushing the chassis slowly, until the mounting brackets meet the slide rail stops (~12 in or 30 cm). You will hear an audible click.**

The following graphic illustrates the 7120/7320 chassis insertion and slide rail locks usage.





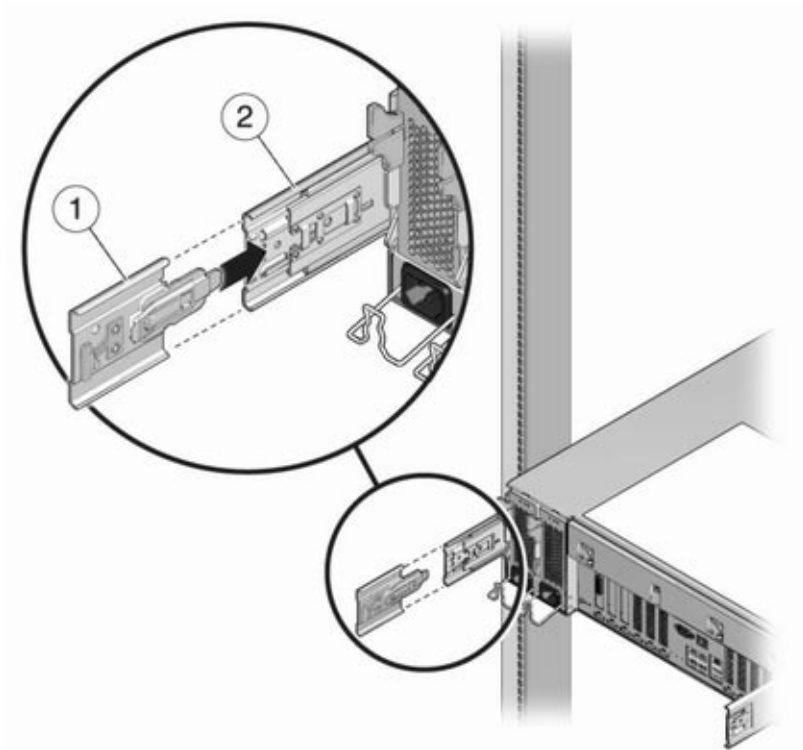
The following graphic illustrates 7420 chassis insertion.



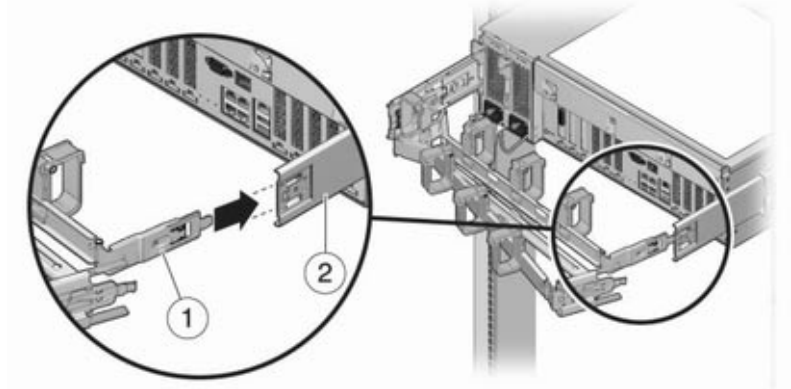
### ▼ Installing the Cable Management Assembly

This procedure is completed from the back of the equipment rack.

- 1 Attach the cable management assembly (CMA) rail extension to the left slide rail until the extension locks into place.

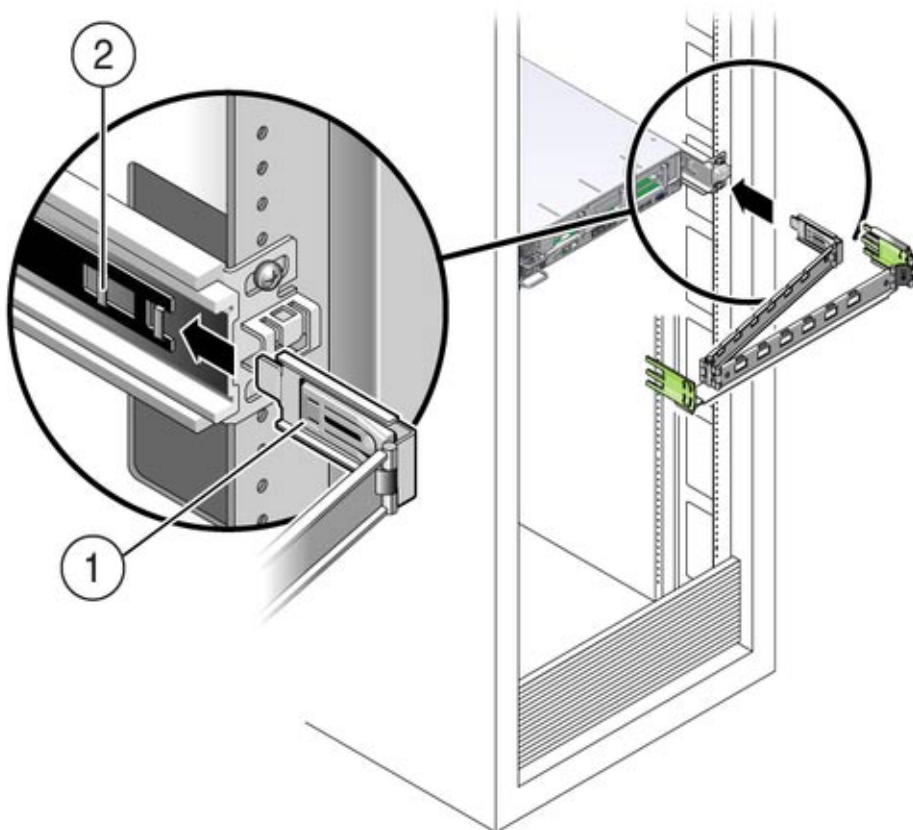


- 2 Insert the CMA mounting bracket connector into the right slide rail until the connector locks

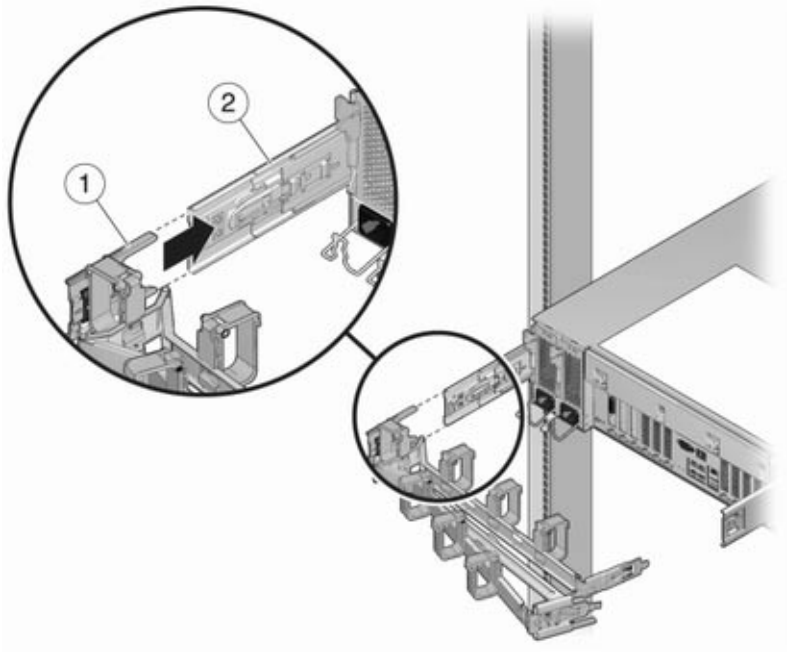


into place.

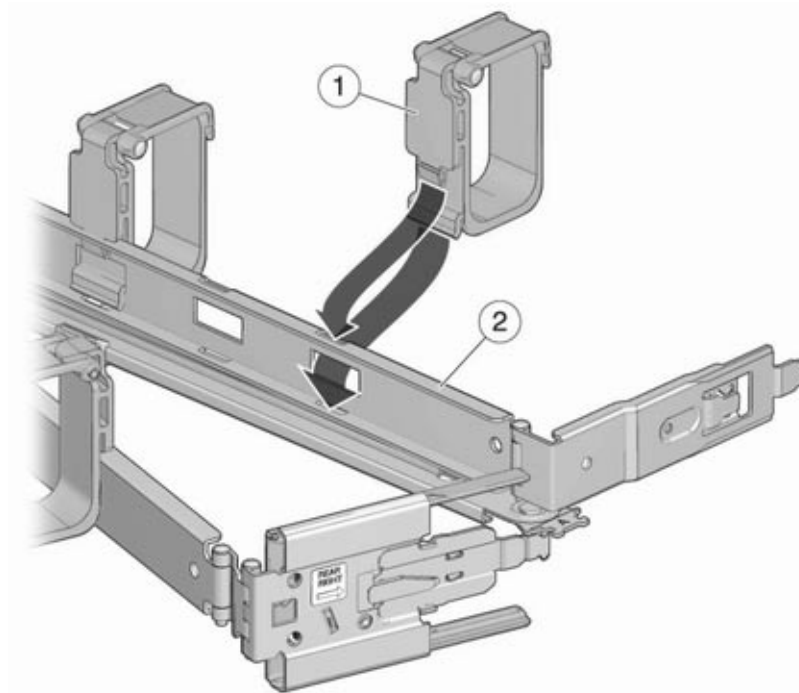
- 3 Insert the right CMA slide rail connector (1) into the right slide rail assembly (2) until the connector locks into place.



- 4 Insert the left CMA slide rail connector (1) into the rail extension on the left slide rail assembly (2) until the connector locks into place.



- 5 After you install and route the cables through the assembly, attach the hook and loop straps (1) to secure the cables. Then attach the right and left outer latches to support the assembly.



## Sun Disk Shelf

### Precautions

Observe the following cautions when installing a Sun Disk Shelf into a rack using the rail assembly in the bolt-on rack mount kit. Note that if your rack mount kit shipped with installation instructions, use those instructions instead.

- Always load equipment into a rack from the bottom up so that it will not become top-heavy and tip over. Deploy the anti-tip bar to prevent the rack from tipping during equipment installation.
- Ensure that the temperature in the rack does not exceed the controller's maximum ambient rated temperatures. Consider the total airflow requirements of all equipment installed in the rack to ensure that the equipment is operated within its specified temperature range.

## Prerequisites

Refer to the poster that shipped with the product or the *Sun ZFS Storage 7x20 Service Manual* located on <http://wikis.sun.com/display/fishworks> (<http://wikis.sun.com/display/fishworks>) for an overview of your disk shelf.

- Sun Disk Shelf Overview - view component diagrams and specifications

## Tools and Equipment Needed

To install the shelf, you need the following tools:

- You will need a No. 2 Phillips head screwdriver that is a minimum of 4 inches long.
- A mechanical lift is highly recommended because the chassis can weigh between 91-170 lbs. (42-77kg). At least three people are required: two to install the shelf or controller and one spotter to engage the rails.
- :If a mechanical lift is not available, remove the power supplies, SIM boards and hard disk drives to reduce the weight, see Sun Disk Shelf Maintenance Procedures and Controller Maintenance Procedures for instructions included in the Sun ZFS Storage 7x20 Service Manual on <http://wikis.sun.com/display/fishworks>. (<http://wikis.sun.com/display/fishworks>.)

Use one of the following racks for the Sun Disk Shelf.

- Sun Rack 900/1000 cabinet
- Sun Fire cabinet
- Sun StorEdge Expansion cabinet
- Sun Rack II 1042/1242 cabinet
- Any 19-inch wide, 4-post, EIA-compatible rack or cabinet with a front-to-back depth between vertical cabinet rails of 61 cm to 91 cm (24 in. to 36 in.). The cabinet can have threaded or unthreaded cabinet rails.

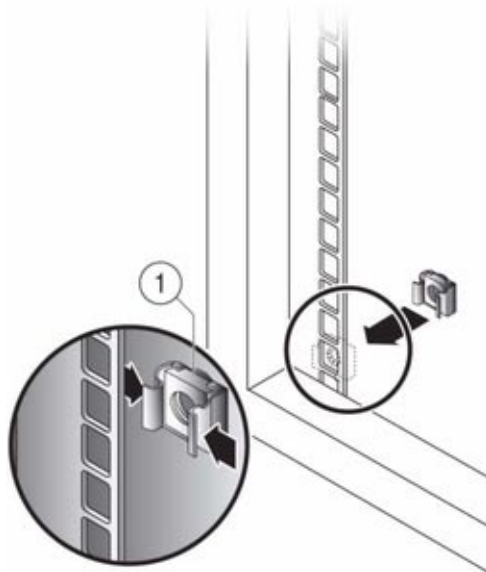
Position the rack where the shelf is to be installed adjacent to the rack where the controller is installed, if separate. Stabilize the cabinet and lock the casters.

# Tasks

## Sun Disk Shelf Tasks

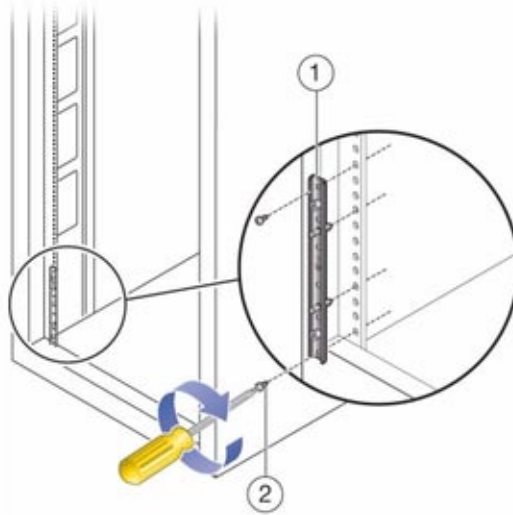
### ▼ Installing the Sun Disk Shelf into the Rack Slide Rails

- 1 Starting at the bottom of the cabinet, locate the appropriate rack unit (RU) height. Install Disk Shelves below controllers to prevent rack from tipping. The Sun Disk Shelf requires four standard mounting units (4RU) of vertical space in the cabinet.
- 2 If you are using a universal 19-inch or Sun Rack II cabinet, snap an M6 square cage nut into the 4U location where you will be installing the system. Install in the top and bottom holes.



- 3 Install appropriate rail plates in four locations on the rack (2 front and 2 back) by aligning the two pins on the rail plate with holes on the cabinet rails.

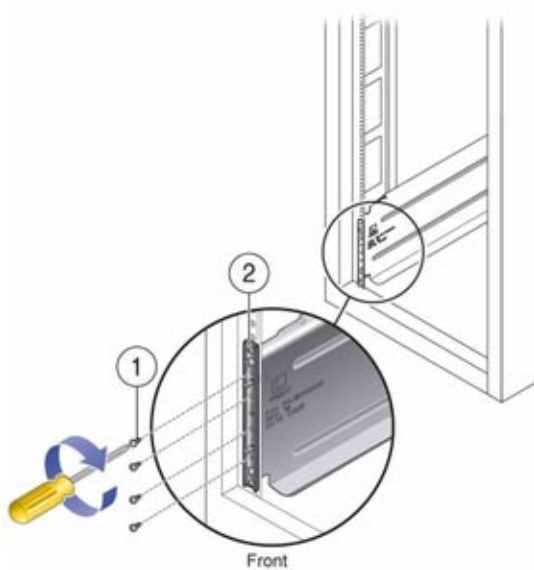
- 4 Insert M6 screws in the top and bottom holes of each rail plate and tighten (8 total places).



- 5 Install each rail by first aligning the front pins of the rack adapter plates with corresponding holes in the front of the rail, then adjust the rail to fit the rack and insert the pins from the rear rack adapter plates into the corresponding holes of the rail.



- 6 Install four 8-32 screws into the four remaining front and rear holes of each rack rail (16 total).



- 7 Using a mechanical lift or two people, one at each side of the shelf or controller, carefully lift and rest the shelf on the bottom ledge of the left and right rails. The following graphic illustrates the chassis insertion.



- 8 Carefully slide the shelf into the cabinet until the front flanges of the shelf touch the vertical face of the rack.
- 9 Tighten the captive screws on each side of the front of the shelf to secure the shelf to the rack.
- 10 At the back of the disk shelf, slide a system locking clip onto each lower corner of the chassis.

## See Also

- [Cabling Diagrams](#)

# Cabinet

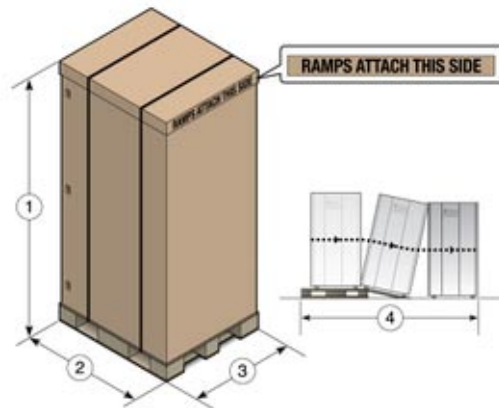
## 7700 Cabinet Planning and Installation

Use the following system specifications to ensure that the installation site is ready for the new Sun ZFS Storage 7700 system. Pay particular attention to specifications to determine if power and air conditioning requirements are met by your datacenter.

To view component diagrams and specifications, refer to the 7700 Overview section of the *Sun ZFS Storage 7x20 Service Manual* at <http://wikis.sun.com/display/fishworks>. (<http://wikis.sun.com/display/fishworks>.)

### Space Requirements

**Caution** - Three people are required to offload the cabinet: two at the front and one at the rear.



The table below lists specifications for the shipping package.

Item	Description	U.S.	Metric
1	Height	85.25 in	216.5 cm
2	Depth	52.5 in	133.3 cm
3	Width	45.5 in	115.5 cm
4	Unloading distance	15 ft	4.45 m
	Maximum weight, storage system cabinet	1,970 lb	894 kg

**Caution -** The shipping pallet is designed so that the cabinet can only be unloaded in one direction. Orient the shipping container so that the label RAMPS ATTACH THIS SIDE is facing the direction the cabinet should be offloaded from the pallet. When you roll the cabinet off the shipping pallet, you will need a total distance of at least 15 feet/4.5 meters for safe maneuvering, as shown above.

**Tools**

During unpacking, you will need these tools to unpack the shipping package:

- Cutters for the package strapping tape
- #2 Phillips screwdriver

These tools are included in the shipping package:

- 13 mm/17 mm combination open end wrench
- 19 mm open end wrench

**Physical Specifications**

The following figure shows the system cabinet.

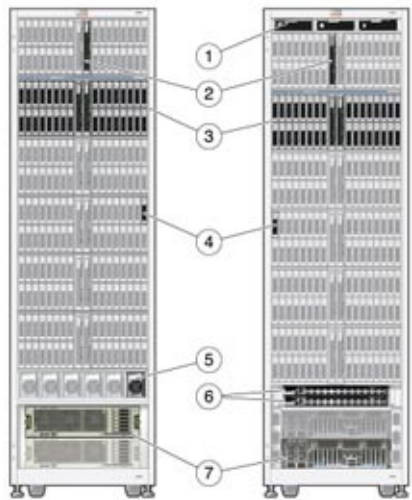


Figure Legend			
1	Fan trays	5	Power supplies
2	Leaf controller cards (LCCs)	6	Rack controller card (RCC)
3	Disk trays	7	Storage controllers

---

**Figure Legend**


---

4      Disk drives

---

The following table lists physical specifications for the storage system main cabinet.

Description	U.S.	Metric
Width	23.5 in	60 cm
Depth (without doors)	43.0 in	109 cm
Depth (with front and rear doors)	46.0 in	117 cm
Height	79.5 in	202 cm
Maximum weight, storage system cabinet	1,740 lb	790 kg
Clearance, front or rear of system for service access	48 in	122 cm
Clearance, above system	18 in	46 cm

## Service Access

All customer replaceable units (CRUs) are accessed from the front or back of the cabinet. There are no CRUs inside the cabinet.

**Caution** - Access to the inside of the cabinet is limited to Sun Service personnel only. There are no CRUs inside of the cabinet.

If the system is located in a row of cabinets and an internal FRU must be replaced, the system must be moved forward or backward out of the row for removal of the side panels. The front and rear clearance values in the table above account for this movement.

## Cooling

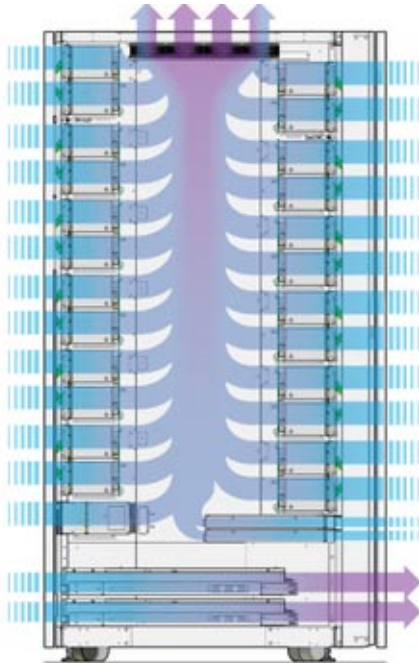
The following table lists the specifications for the main cabinet.

Cooling Specifications	Operating	Non-Operating
Maximum Heat output, main system	5300 W (estimated)	
Ambient temperature range	5 to 35C/41 to 95F	0 to 50C/32 to 122F
Humidity range	20 - 80% relative humidity	8 - 80% relative humidity
Altitude range	3 km/12,000 ft.	12 km/40,000 ft.

The airflow patterns in the storage system are as follows:

- Air enters the front and rear of the cabinet.
- Fan trays at the top of the cabinet pull exhaust air out of the central area of the cabinet.
- Two storage controllers at the bottom of the storage system cabinet push exhaust air out through the rear of the cabinet.

The following figure shows the airflow patterns in the storage system.



#### **Underfloor Cooling Scheme**

The following illustration shows underfloor cooling of the cabinet and is described in the table.

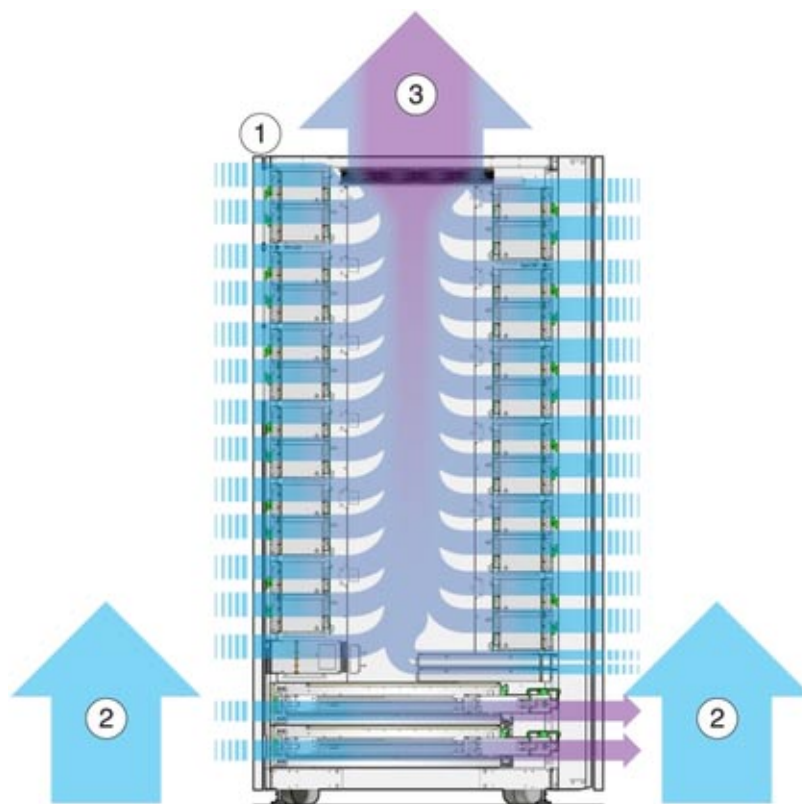


Figure Legend

1	Front of System
2	Allow underfloor cooling at front and back
3	Warm air is ventilated from the top. Allow 18" of clearance.

### Overhead Cooling Scheme

The following illustration shows overhead cooling of the cabinet and is described in the table.

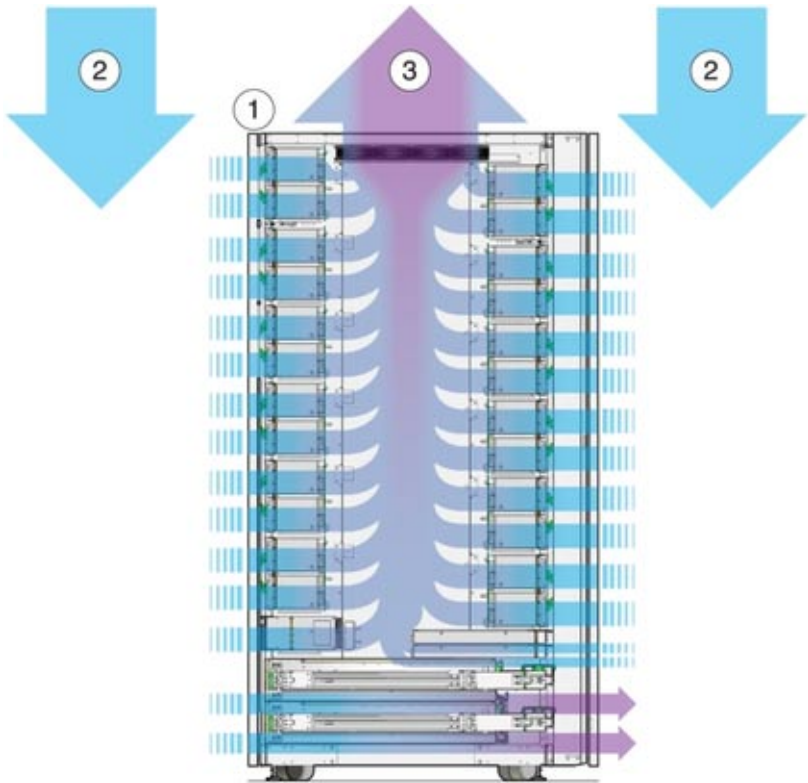


Figure Legend	
1	Front of System
2	Overhead cooling should be directed at both front and back of system.
3	Warm air is ventilated from the top. Allow 18" of clearance.

**Overhead Cooling Hot/Cold Aisle**

The following illustration shows overhead cooling for hot/cold aisle and is described in the table.



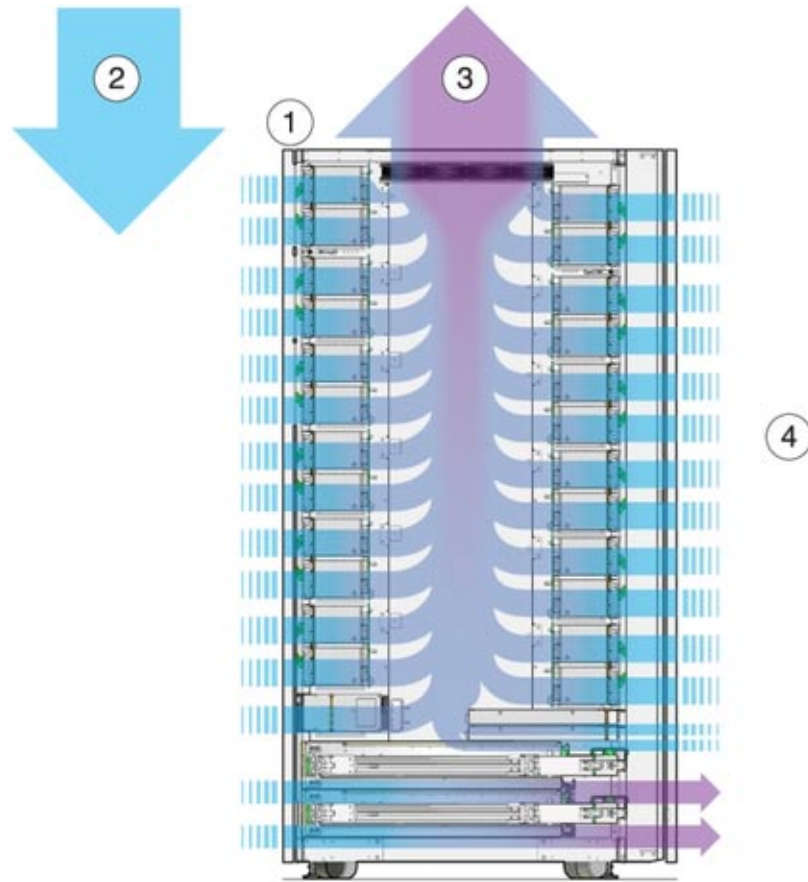


Figure Legend	
1	Front of System
2	Overhead cooling in the cold aisle should be directed at the front of the system.
3	Warm air is ventilated from the top. Allow 18" of clearance.
4	Hot aisle ambient temperature cannot exceed 35C (95F)

## Electrical Specifications

The following table lists the specifications for the main cabinet.

Electrical Specifications	Value
AC voltage range	200-240 VAC, 50-60 Hz

Electrical Specifications	Value
AC current, maximum for main cabinet (5300 W)	26.5A total

Power Cords	Description
Storage controller 0	2 power cords, rated at 10 A each, N+1 redundancy
Storage controller 1	2 power cords, rated at 10 A each, N+1 redundancy
Main cabinet	6 power cords, rated at 16 A each, divided into 2 separate circuits of 3 cords. Each circuit provides N+1 redundancy

**Caution** - The electrical power to the system must be controlled by external breaker switches. Do not plug in any power cables. Only power on the system by following the instructions in the [Powering On and Configuration](#) section of the *Sun ZFS Storage 7x20 Installation Guide* available at <http://wikis.sun.com/display/fishworks>. (<http://wikis.sun.com/display/fishworks>.)

Two separate electrical sources are required for redundant operation of the storage system main cabinet, as shown in the following figure.

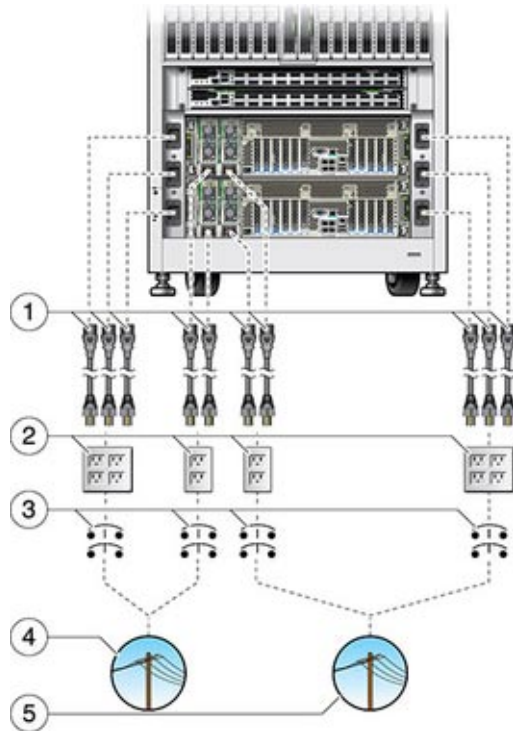


Figure Legend				
1	Storage cabinet and storage controller power cords		4	Power source A
2	Wall power outlets		5	Power source B
3	Circuit breakers or wall-mounted power switches			

## Site Planning Checklists

### Access Route

Confirm that the unloading specifications for the shipping package in [Space Requirements](#) have been addressed.

Requirements	Yes	No	NA
Has the Sun ZFS Storage 7700 Appliance location been allocated?			
Is the location vacant for the new equipment?			

Requirements	Yes	No	NA
Does the floor layout meet the equipment maintenance access requirements?			
Is there adequate space available for maintenance?			
Is the floor to ceiling height a minimum of 103.25 in (8.6 feet)?			
Have cabinet stabilization measures been considered? (Leveling feet?)			
Do you need to obtain permission to remove floor tiles to accommodate service?			
Does the raised floor satisfy the weight requirements for the new hardware?			
Are there cable routing channels?			
Are there cable routing cutouts?			

## Data Center Environment

Confirm that the cooling specifications for the cabinet in [Cooling Requirements](#) have been addressed.

Requirements	Yes	No	NA
Does the computer room air handling meet temperature and humidity requirements?			
Does the installation floor layout satisfy the ventilation requirements?			
Will the equipment be positioned so that the exhaust air of one rack does not enter the air inlet of another rack?			
Do the computer room air conditioners provide sufficient airflow?			
Is airflow adequate to prevent hotspots?			
Can the computer room continuously satisfy environmental requirements?			
Can more vented floor tiles be obtained if required?			

## Facility Power

Confirm that the power specifications for the cabinet in [Electrical Specifications](#) have been addressed.

Requirements	Yes	No	NA
Do you know the required operating voltages and electrical current levels of the device and peripherals? As an aggregate, the system will draw <b>48amps at 208 volts</b> . This needs to be split across two separate power grids and divided into smaller circuits.			
Are separate power sources available for the new equipment at the designated location?			
Are power outlets available for the new equipment at the designated location?			
Are enough power outlets provided? 10 L6-20 total. <b>Six L6-20/C19 (cabinet) and four L6-20/C13 (controllers)</b> split across two separate power grids.			
Are the circuit breakers for the equipment suitable in terms of voltage and current-carrying capacities?			
Does the power frequency meet the equipment specifications?			

## Logistics

Confirm that the logistical requirements for the cabinet in [Unpacking and Moving the Cabinet](#) have been addressed.

Requirements	Yes	No	NA
Do you have contact information for data center personnel?			
Is there security or access control for the data center?			
Are laptops, cell phones, and cameras allowed in the data center?			
Does the building have a delivery dock?			
Is there a delivery/unpacking/staging area?			
Is the delivery inside?			
If the delivery is not inside, is the site prepared for uncrating?			
Is the unpacking/staging area protected from the elements?			
Does the building have an adequate receiving area?			
Will sufficient moving personnel be available to install the hardware?			
Are you prepared for uncrating and trash removal? Is uncrating of cabinet and cabinet trash removal required?			
Are there any restrictions on delivery truck length, width or height?			

Requirements	Yes	No	NA
Does the customer allow cardboard boxes and/or other packing material in the computer room?			
If no, do ground level deliveries require a truck with a side rail lift ?			
Is there a time constraint on dock access? If yes, provide time constraints.			
Is tail-lift required on Delivery Carrier to unload the equipment at delivery dock?			
Is delivery only required to end-user's loading bay or is delivery inside required?			
Will any lifters, ramps, steel plates, or floor covers be required to place the equipment in the computer room?			
Is a list of special equipment requirements needed by the delivery carrier available? (Non-Floor Damaging Rollers, Transport Dollies, Pallet Jacks, or Fork Lifts)			
Have any special delivery options (including inside delivery and/or waste removal) been communicated while placing the order?			

## Safety Items

For your protection, observe the following safety precautions when setting up your equipment:

- Follow all Sun cautions, warnings, and instructions marked on the equipment and described in Important Safety Information for Sun Hardware Systems.
- Ensure that the voltage and frequency of your power source match the voltage inscribed on the equipment's electrical rating label.

Requirements	Yes	No	NA
Is there an emergency power shutoff? Where?			
Is there a fire protection system in the data center room?			
Is the computer room adequately equipped to extinguish a fire?			
Is antistatic flooring installed?			
Is the floor below the raised floor free of obstacles and blockages?			

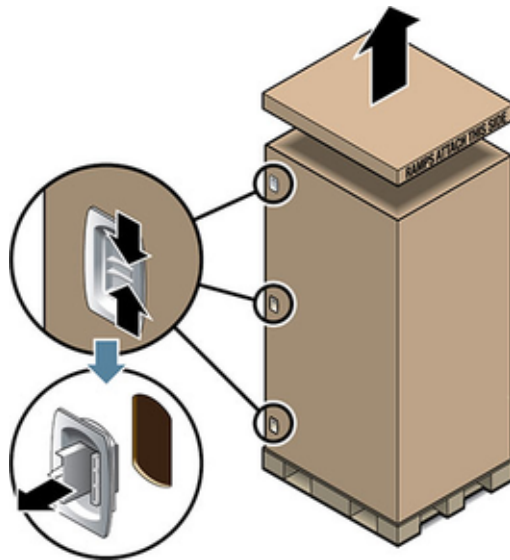
# Tasks

## Cabinet Tasks

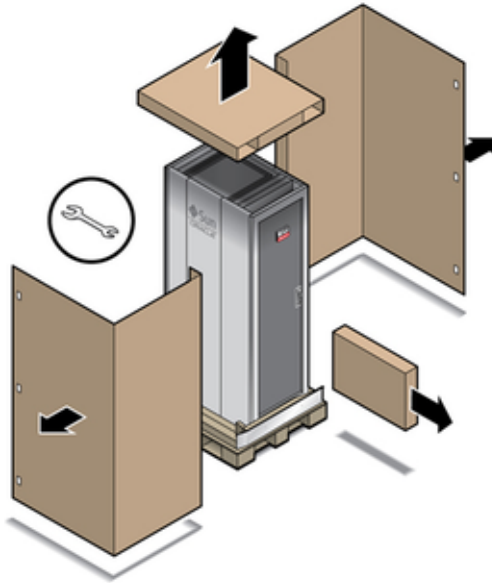
### ▼ Unpacking and Moving the Cabinet

The following instructions illustrate how to unpack and move the 7700 cabinet. As a prerequisite to this task, familiarize yourself with the 7420/7720 storage controller rear panel section of the *Sun ZFS Storage 7x20 Service Manual* at <http://wikis.sun.com/display/fishworks>. (<http://wikis.sun.com/display/fishworks>.)

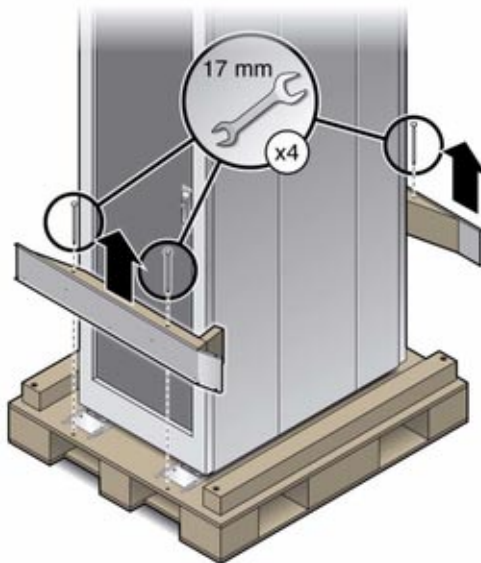
- 1 Use a forklift or pallet jack to move the shipping carton to a location that is as close to the installation site as possible.
- 2 Ensure that you have enough space to remove the storage system from the shipping pallet. See the [Space Requirements](#) section for dimensions.
- 3 Cut the straps that hold the carton onto the shipping pallet.
- 4 Remove the top of the carton, and unlock the sides of the carton.



- 5 Remove the carton sides, top, and accessories kit.

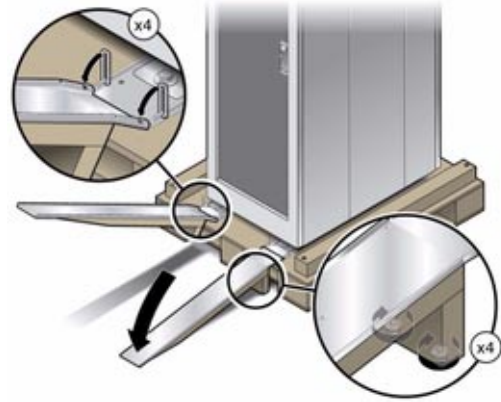


- 6 Remove the ramps from the pallet as shown in the following illustration.



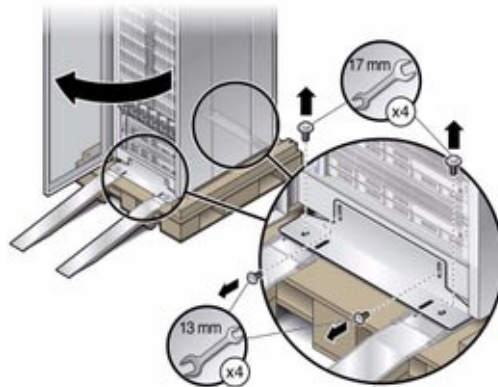


- 7 Install the pallet ramps. Ensure that you lock the ramps to the pallet skids and that you lower the



ramp bolts so that they rest on the floor.

- 8 Open the cabinet doors, and remove the shipping restraints.



- 9 Check that the leveling feet have not lowered during transportation.

- 10 With at least two other people, move the cabinet off of the pallet. Ensure that the cabinet does not tilt to either side while you are moving the cabinet. Never move the cabinet alone.



- 11 Standing at both ends of the cabinet, move the storage system to the installation site. Caution: all four casters swivel. When moving the cabinet down ramps, do not allow it to turn unexpectedly. The front or rear door must always face the direction of travel. The cabinet can tip over if the cabinet is moved sideways up or down a ramp. Three people are required to move the cabinet: one person should be at the front to guide the movement and two at the rear.



- 12 Lower all four of the stabilization feet as shown in the illustration.



- 13 Complete [Powering on and Configuration](http://wikis.sun.com/display/fishworks) section of the Sun ZFS Storage 7x20 Installation Guide available at <http://wikis.sun.com/display/fishworks>. (<http://wikis.sun.com/display/fishworks>.)



# Cabling

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## Cabling



## Cabling Diagrams

The diagrams in the sections that follow illustrate how to properly connect storage controllers or cabinets, either in standalone or clustered configurations, to one or more disk shelves or expansion cabinets. Use the images as a key to understanding how the abstracted diagrams correspond to actual hardware:

- [Connecting Expansion Storage to the 7120](#)
- [Connecting Expansion Storage to the 7320](#)
- [Connecting Expansion Storage to the 7320 Cluster](#)
- [Connecting Expansion Storage to the 7420 \(2 HBAs\)](#)
- [Connecting Expansion Storage to the 7420 \(3 HBAs\)](#)
- [Connecting Expansion Storage to the 7420 \(4 HBAs\)](#)
- [Connecting Expansion Storage to the 7420 Cluster \(2 HBAs\)](#)
- [Connecting Expansion Storage to the 7420 Cluster \(3 HBAs\)](#)
- [Connecting Expansion Storage to the 7420 Cluster \(4 HBAs\)](#)
- [Connecting Expansion Storage to the 7700](#)

Oftentimes, the need to expand storage requires the addition of another HBA to your storage controller. While in single-head configurations, this is not possible to do without disrupting service. In a clustered configuration, the heads can be powered down individually for servicing and reconnected to the new storage chain. For instructions, refer to the following sections of the

*Sun ZFS 7x20 Appliance Service Manual* available at <http://wikis.sun.com/display/fishworks>.  
(<http://wikis.sun.com/display/fishworks>.)

- Expanding from 2 to 3 HBAs
- Expanding from 3 to 4 HBAs

To view cabling diagrams for legacy platforms, refer to the following sections of the *Sun Storage 7000 Unified Storage System Installation Guide* at <http://wikis.sun.com/display/fishworks>.  
(<http://wikis.sun.com/display/fishworks>.)

- Connecting Expansion Storage to the 7210
- Connecting Expansion Storage to the 7310
- Connecting Expansion Storage to the 7310 Cluster
- Connecting Expansion Storage to the 7410 (2 HBAs)
- Connecting Expansion Storage to the 7410 (3 HBAs)
- Connecting Expansion Storage to the 7410 Cluster (2 HBAs)
- Connecting Expansion Storage to the 7410 Cluster (3 HBAs)

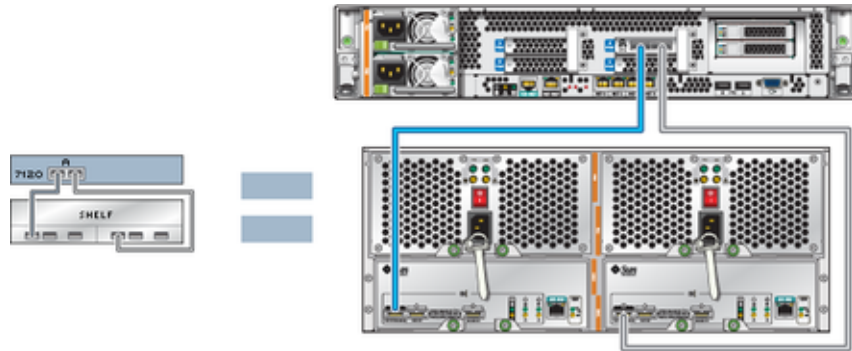
## 7120 Cabling

### Connecting Expansion Storage to the Sun ZFS Storage 7120

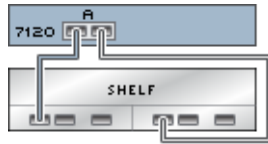
The Sun ZFS Storage 7120 can support up to two Sun Disk shelves. The figures below show the complete set of supported configurations, as well as steps to migrate from one state to another.

#### Sun ZFS Storage 7120

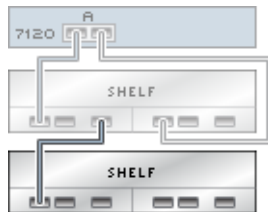
**NOTE:** Cabling diagrams are **not representative** of proper slot location for HBAs.

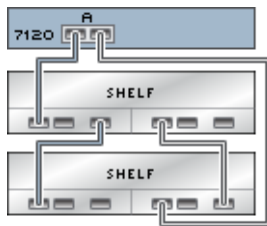
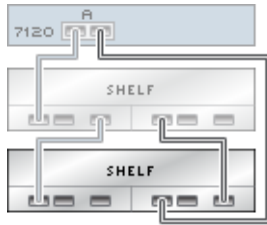


## Cabling Diagrams



**fig. 1** Sun ZFS Storage 7120 system with one Sun Disk shelf





**fig. 2** Sun ZFS Storage 7120 system with two Sun Disk shelves

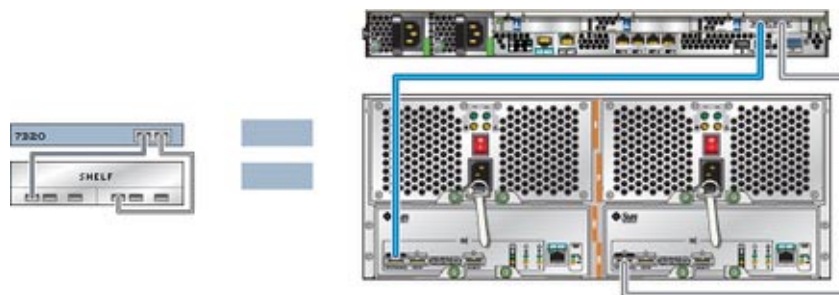
## 7320 Cabling

### Connecting Expansion Storage to the Sun Storage 7320

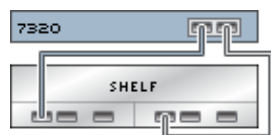
The Sun ZFS Storage 7320 can support up to four Sun Disk shelves. The figures below show the complete set of supported standalone configurations, as well as steps to migrate from one state to another.

**NOTE:** Cabling diagrams are **not representative** of proper slot location for HBAs.

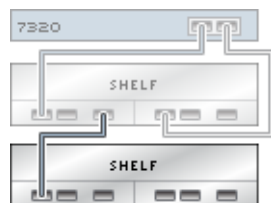


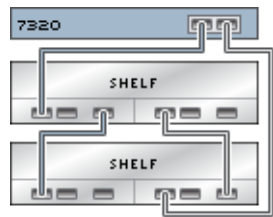
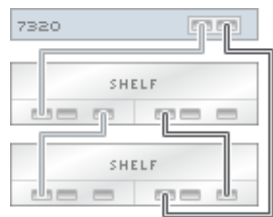


## Cabling Diagrams

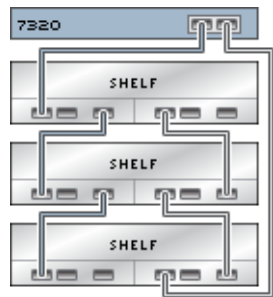


**fig. 1** Sun ZFS Storage 7320 with one Sun Disk shelf

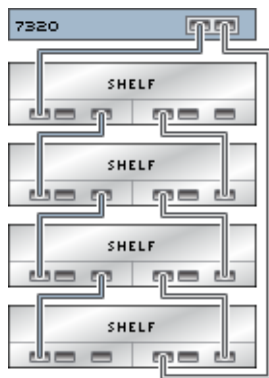




**fig. 2** Sun ZFS Storage 7320 with two Sun Disk shelves



**fig. 3** Sun ZFS Storage 7320 with three Sun Disk shelves



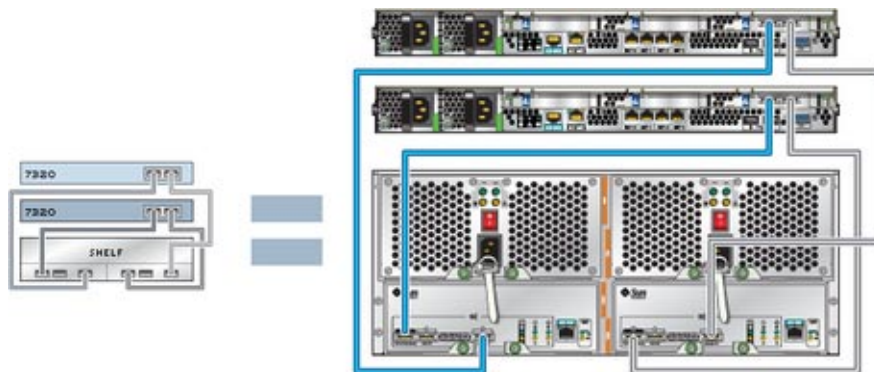
**fig. 4** Sun ZFS Storage 7320 with four Sun Disk shelves

## 7320 Cluster Cabling

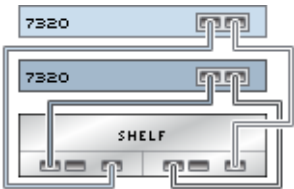
### Connecting Expansion Storage to the Sun Storage 7320 Cluster

The Sun ZFS Storage 7320 cluster can support up to four Sun Disk shelves. The figures below show the complete set of supported redundant cluster configurations, as well as steps to migrate from one state to another.

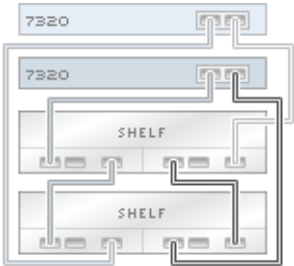
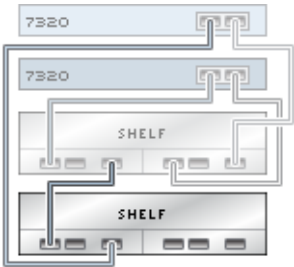
**NOTE:** Cabling diagrams are **not representative** of proper slot location for HBAs.

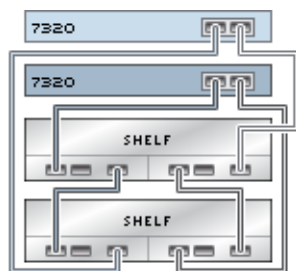


# Cabling Diagrams

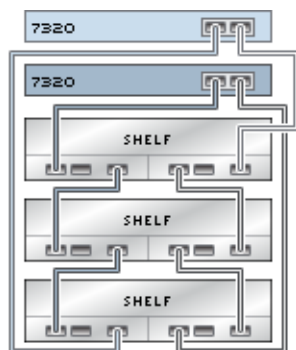


**fig. 1** Sun ZFS Storage 7320 cluster with one Sun Disk shelf

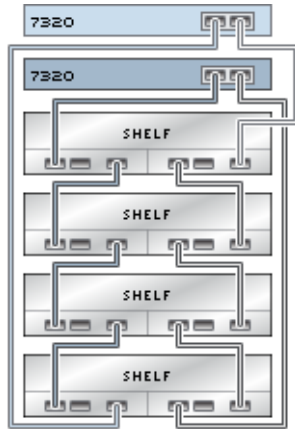




**fig. 2** Sun ZFS Storage 7320 cluster with two Sun Disk shelves



**fig. 3** Sun ZFS Storage 7320 cluster with three Sun Disk shelves



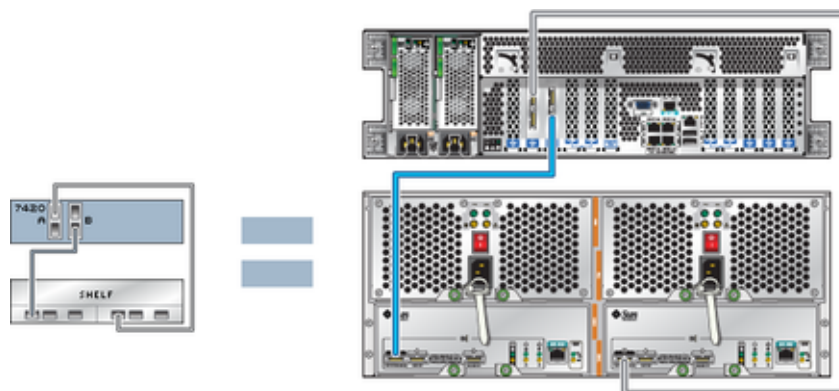
**fig. 4** Sun ZFS Storage 7320 cluster with four Sun Disk shelves

## 7420 Cabling pt.1

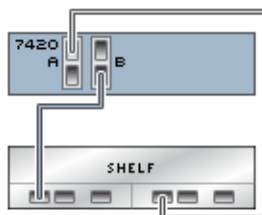
### Connecting Expansion Storage to the Sun Storage 7420 (2 HBAs)

The Sun ZFS Storage 7420 is available with either two, three, or four HBA cards installed, each of which can support up to six Sun Disk shelves. The figures below show a representative sample of stable, balanced configurations with two HBAs, as well as steps to migrate from one state to another.

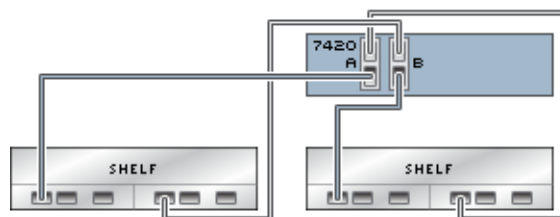
**NOTE:** Diagrams below are **not representative** of proper slot location for HBAs.



## Cabling Diagrams

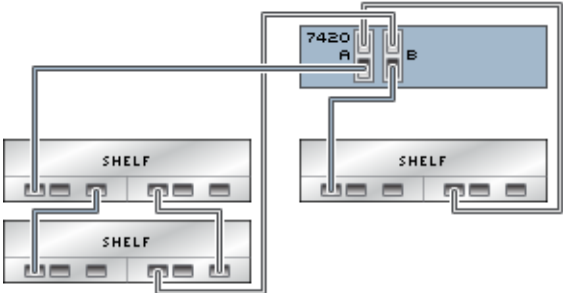
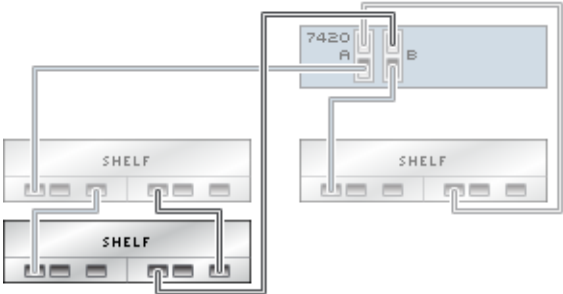
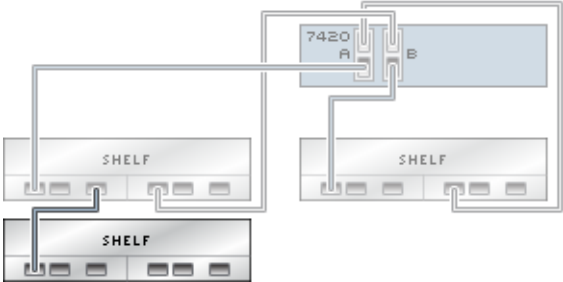


**fig. 1** Sun ZFS Storage 7420 with two HBAs and one Sun Disk shelf



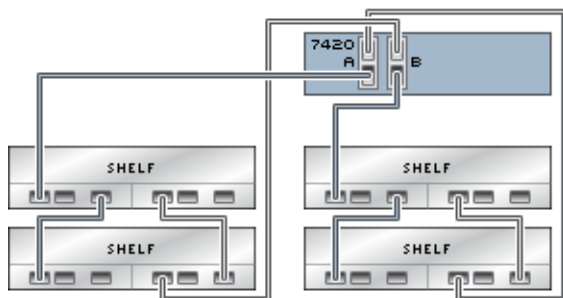
**fig. 2** Sun ZFS Storage 7420 with two HBAs and two Sun Disk shelves



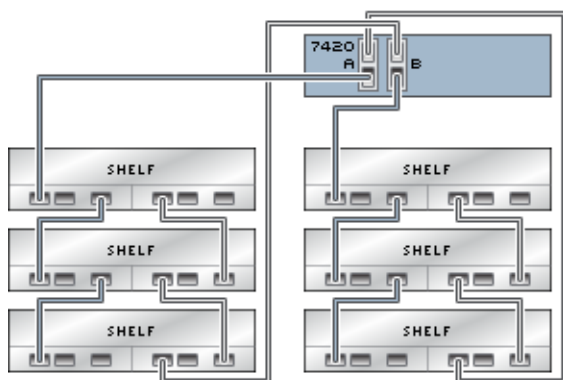




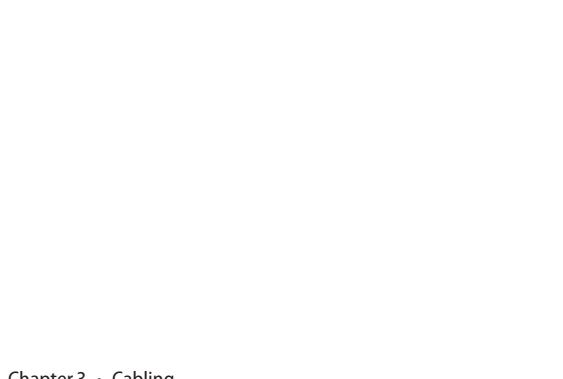
**fig. 3** Sun ZFS Storage 7420 with two HBAs and three Sun Disk shelves



**fig. 4** Sun ZFS Storage 7420 with two HBAs and four Sun Disk shelves



**fig. 5** Sun ZFS Storage 7420 with two HBAs and six Sun Disk shelves



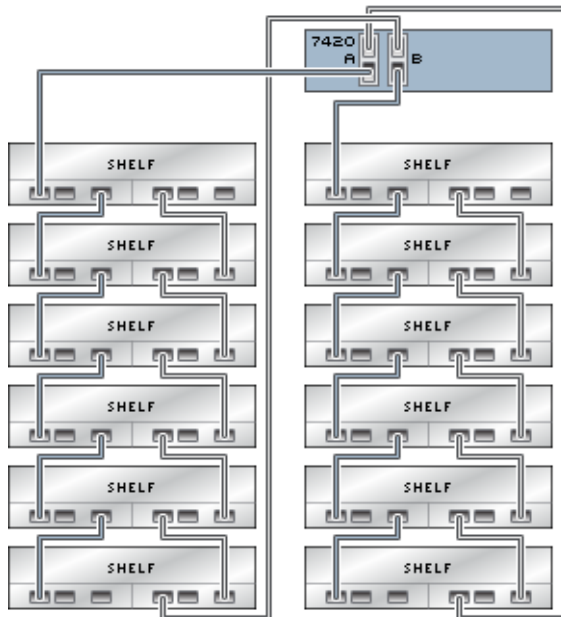


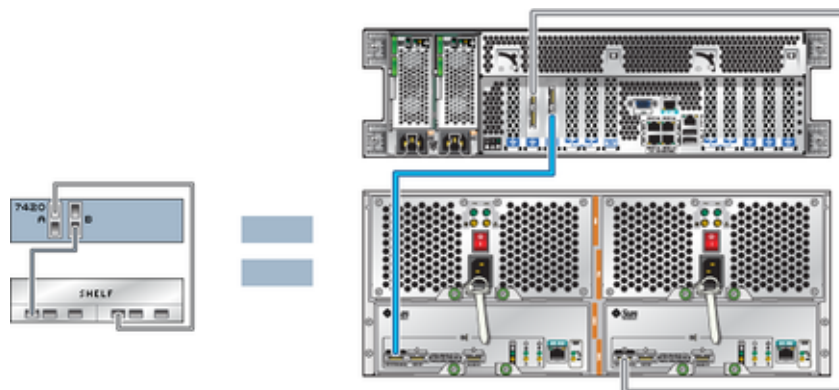
fig. 6 Sun ZFS Storage 7420 with two HBAs and twelve Sun Disk shelves

## 7420 Cabling pt.2

### Connecting Expansion Storage to the Sun Storage 7420 (3 HBAs)

The Sun ZFS Storage 7420 is available with either two, three, or four HBA cards installed, each of which can support up to six Sun Disk shelves. The figures below show a representative sample of stable, balanced configurations with three HBAs, as well as steps to migrate from one state to another.

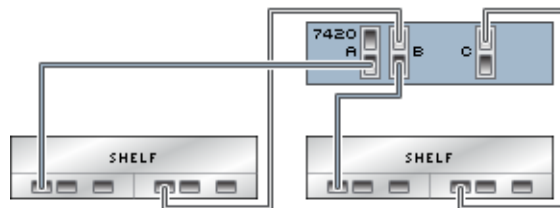
**NOTE:** Diagrams below are **not representative** of proper slot location for HBAs.



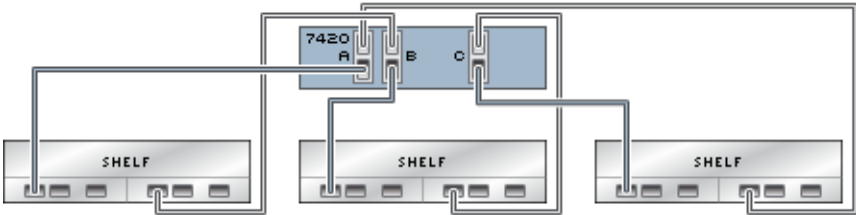
## Cabling Diagrams



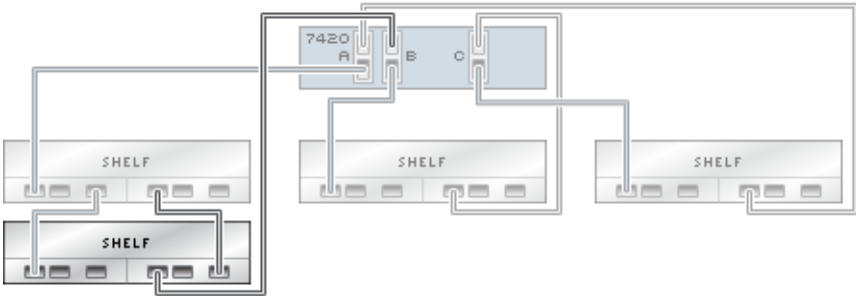
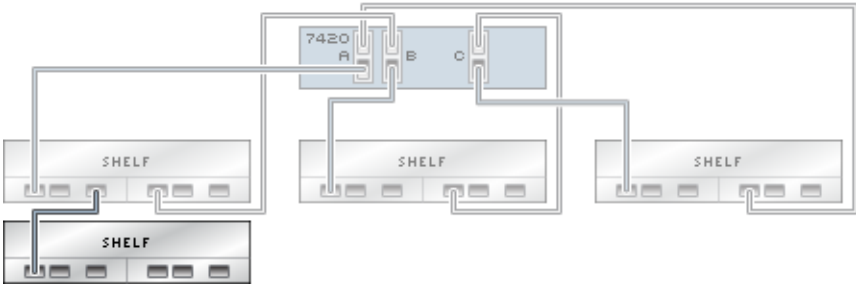
**fig. 1** Sun ZFS Storage 7420 with three HBAs and one Sun Disk shelf

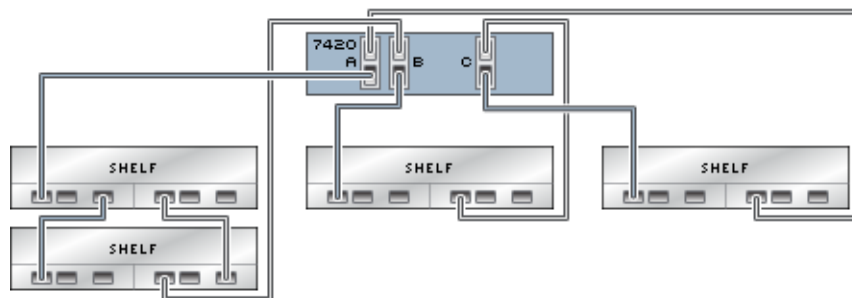


**fig. 2** Sun ZFS Storage 7420 with three HBAs and two Sun Disk shelves

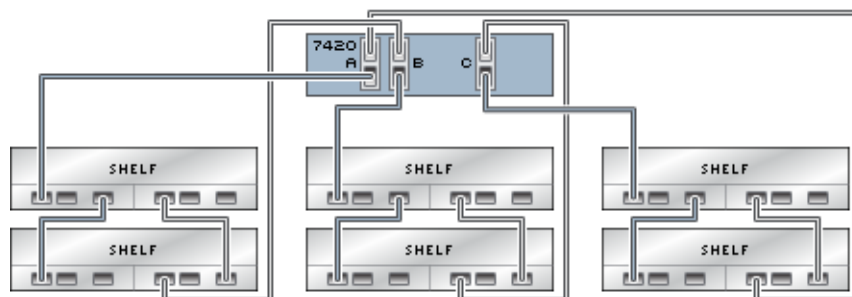


**fig. 3** Sun ZFS Storage 7420 with three HBAs and three Sun Disk shelves

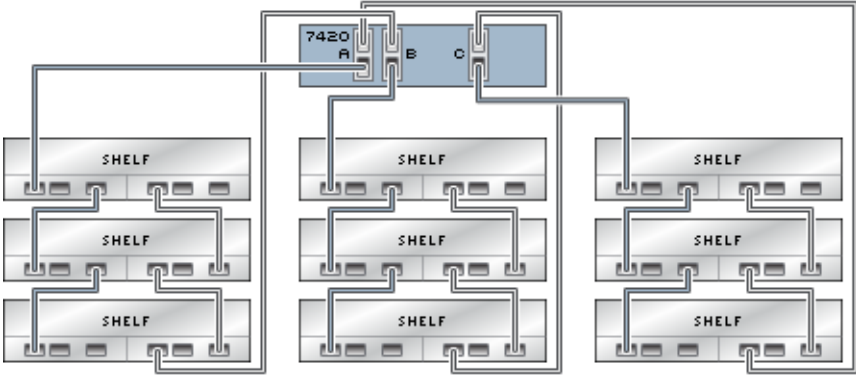




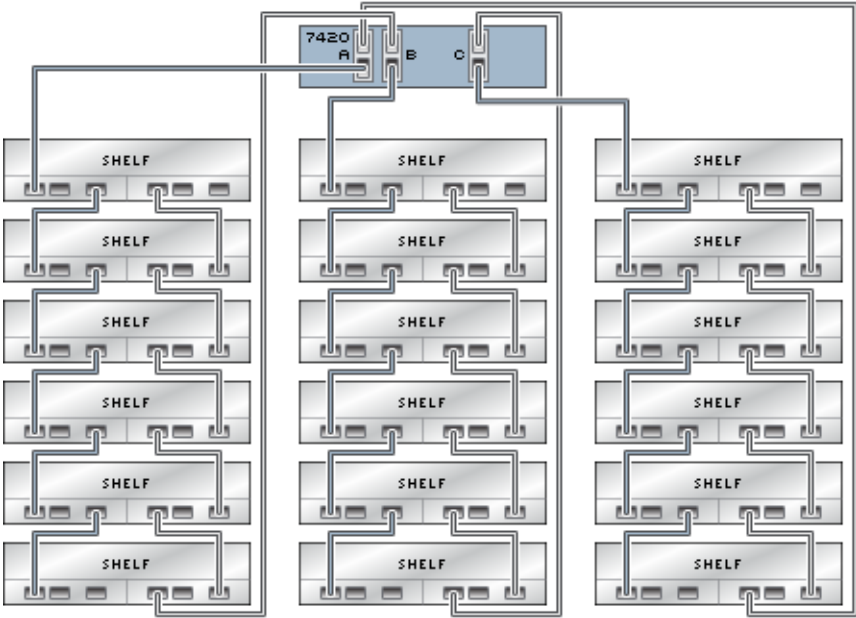
**fig. 4** Sun ZFS Storage 7420 with three HBAs and four Sun Disk shelves



**fig. 5** Sun ZFS Storage 7420 with three HBAs and six Sun Disk shelves



**fig. 6** Sun ZFS Storage 7420 with three HBAs and nine Sun Disk shelves



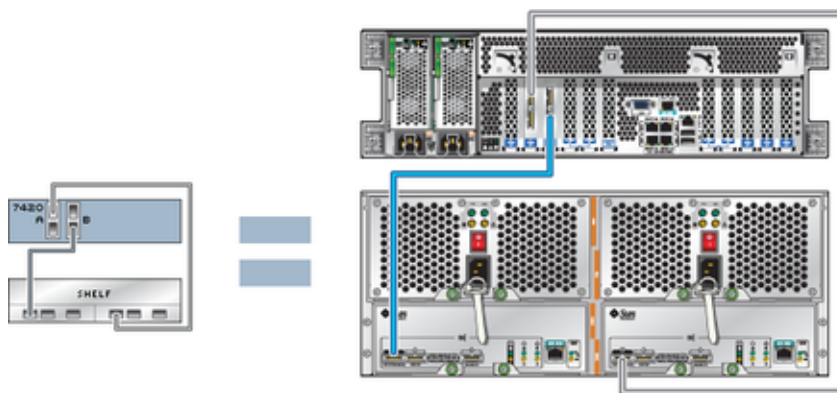
**fig. 7** Sun ZFS Storage 7420 with three HBAs and eighteen Sun Disk shelves

## 7420 Cabling pt.3

### Connecting Expansion Storage to the Sun Storage 7420 (4 HBAs)

The Sun ZFS Storage 7420 is available with either two, three, or four HBA cards installed, each of which can support up to six Sun Disk shelves. The figures below show a representative sample of stable, balanced configurations with four HBAs, as well as steps to migrate from one state to another.

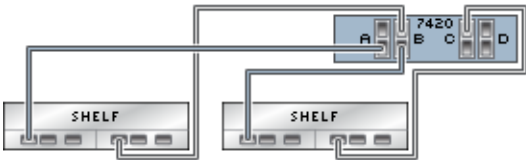
**NOTE:** Diagrams below are **not representative** of proper slot location for HBAs.



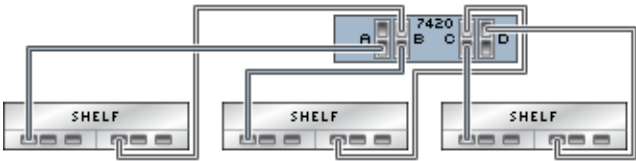
### Cabling Diagrams



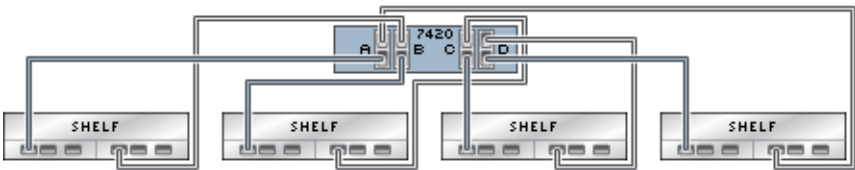
**fig. 1** Sun ZFS Storage 7420 with four HBAs and one Sun Disk shelf



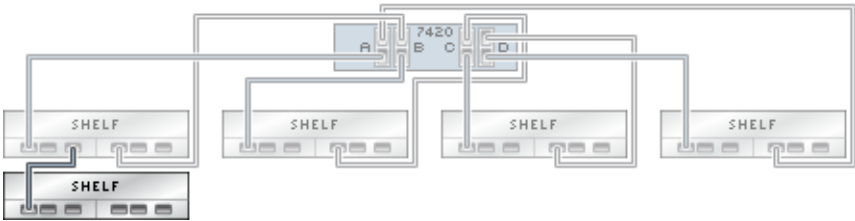
**fig. 2** Sun ZFS Storage 7420 with four HBAs and two Sun Disk shelves



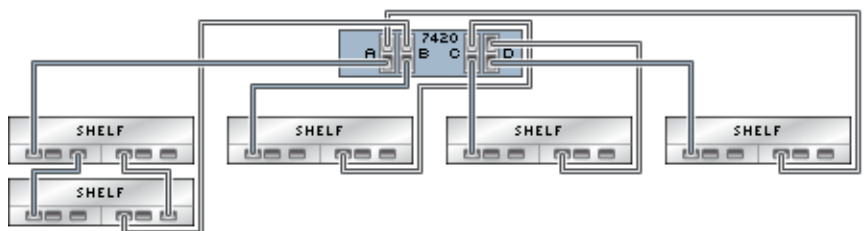
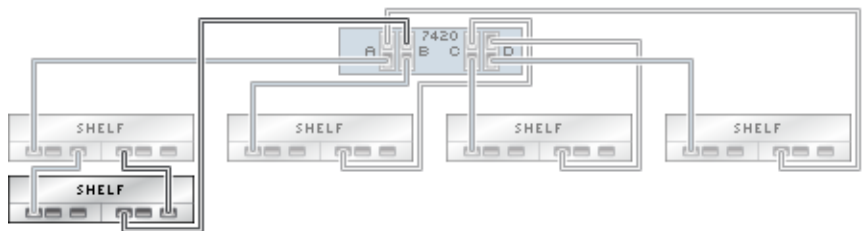
**fig. 3** Sun ZFS Storage 7420 with four HBAs and three Sun Disk shelves



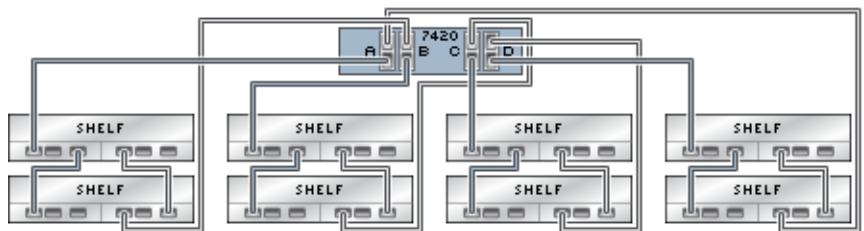
**fig. 4** Sun ZFS Storage 7420 with four HBAs and four Sun Disk shelves



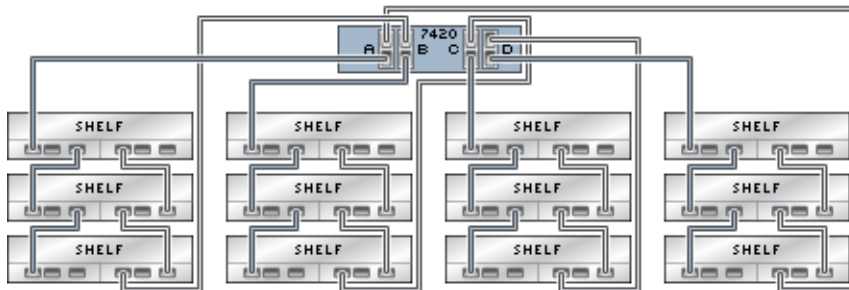




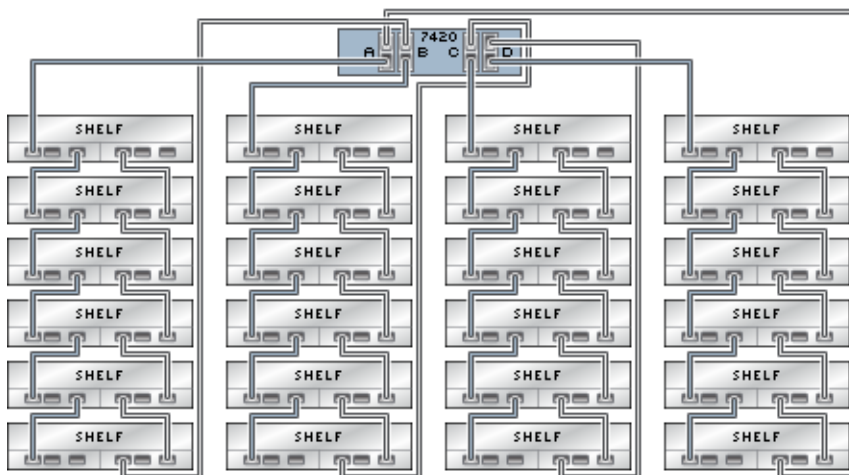
**fig. 5** Sun ZFS Storage 7420 with four HBAs and five Sun Disk shelves



**fig. 6** Sun ZFS Storage 7420 with four HBAs and eight Sun Disk shelves



**fig. 7** Sun ZFS Storage 7420 with four HBAs and twelve Sun Disk shelves



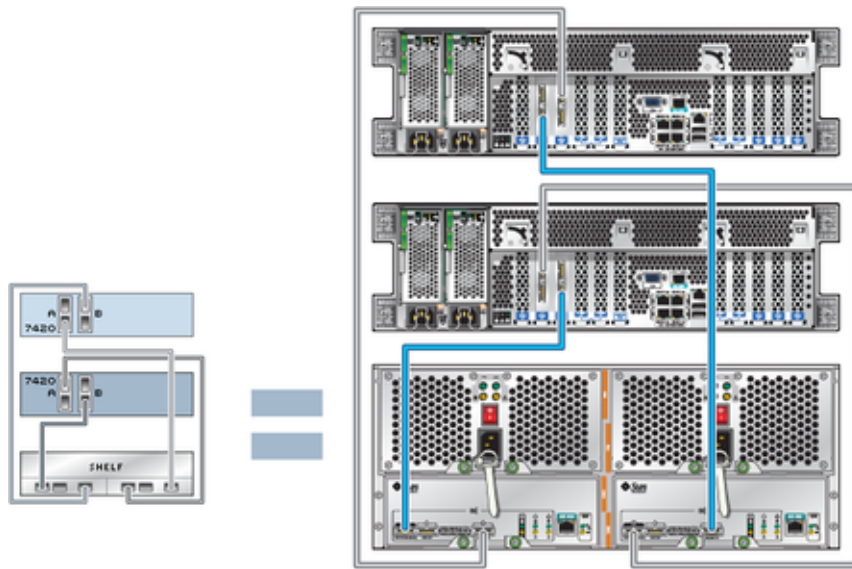
**fig. 8** Sun ZFS Storage 7420 with four HBAs and twenty-four Sun Disk shelves

## 7420 Cluster Cabling pt.1

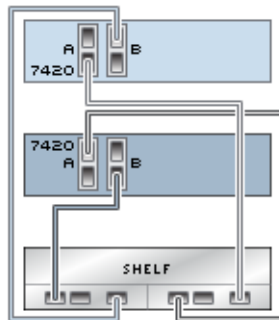
### Connecting Expansion Storage to the Sun Storage 7420 Cluster (2 HBAs)

The Sun ZFS Storage 7420 cluster is available with either two, three, or four HBA cards installed, each of which can support up to six Sun Disk shelves. The figures below show a representative sample of stable, balanced and redundant cluster configurations with two HBAs, as well as steps to migrate from one state to another.

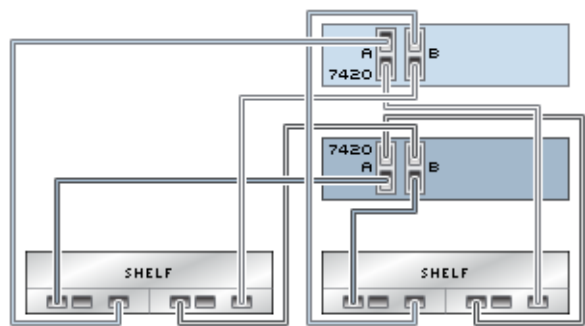
**NOTE:** Diagrams below are **not representative** of proper slot location for HBAs.



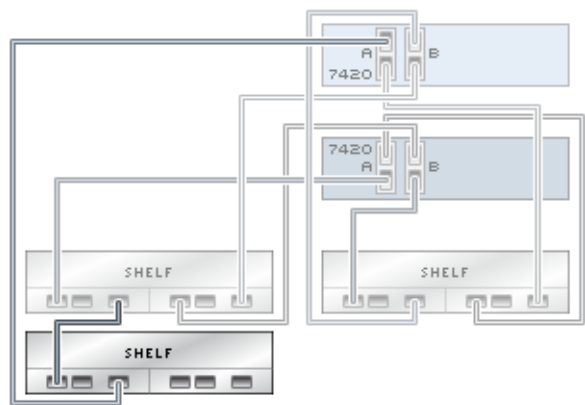
## Cabling Diagrams

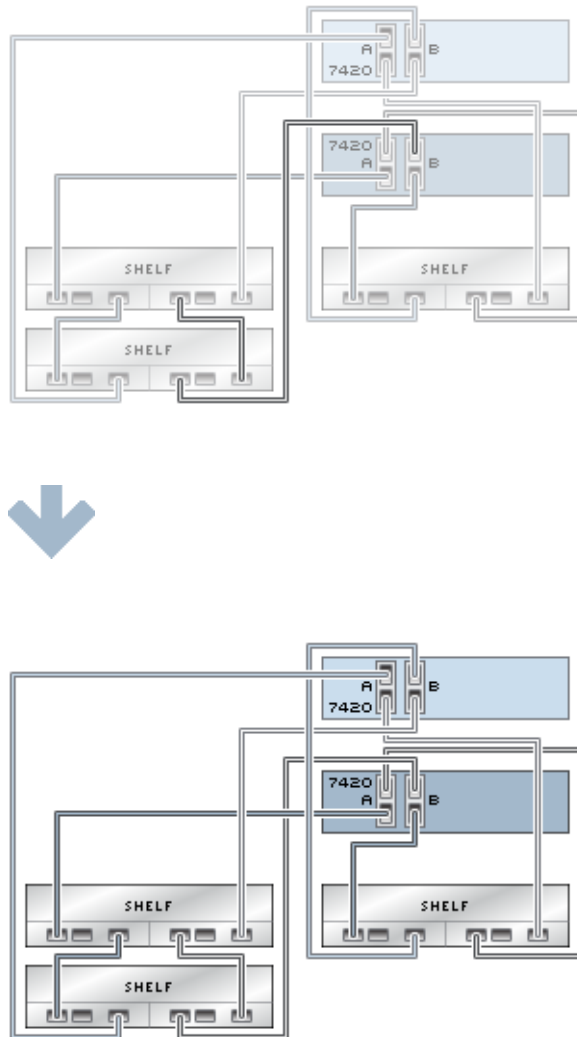


**fig. 1** Sun ZFS Storage 7420 cluster with two HBAs and one Sun Disk shelf

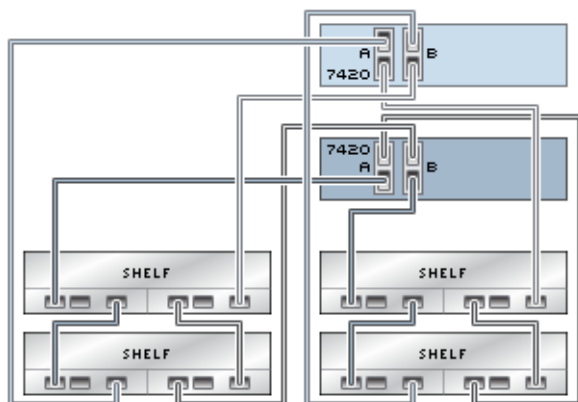


**fig. 2** Sun ZFS Storage 7420 cluster with two HBAs and two Sun Disk shelves

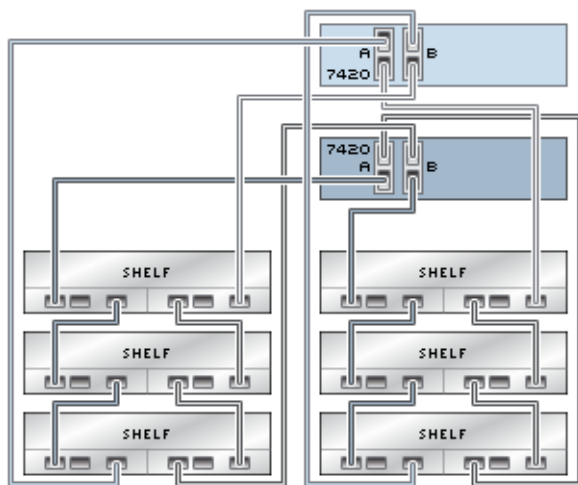




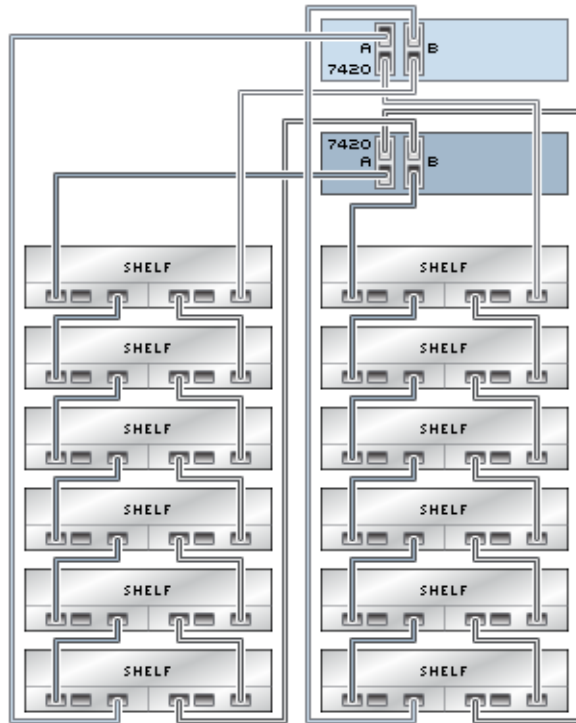
**fig. 3** Sun ZFS Storage 7420 cluster with two HBAs and three Sun Disk shelves



**fig. 5** Sun ZFS Storage 7420 cluster with two HBAs and four Sun Disk shelves



**fig. 6** Sun ZFS Storage 7420 cluster with two HBAs and six Sun Disk shelves



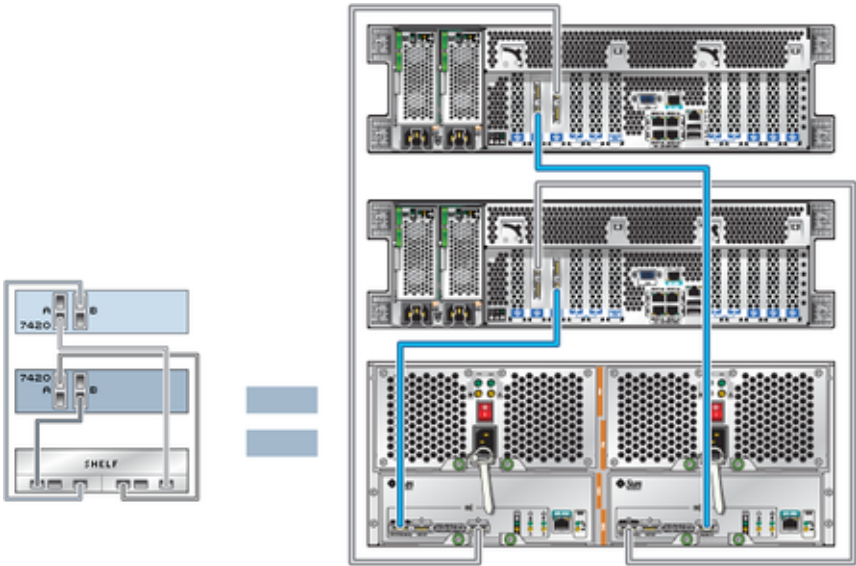
**fig. 7** Sun ZFS Storage 7420 cluster with two HBAs and twelve Sun Disk shelves

## 7420 Cluster Cabling pt.2

### Connecting Expansion Storage to the Sun Storage 7420 Cluster (3 HBAs)

The Sun ZFS Storage 7420 cluster is available with either two, three, or four HBA cards installed, each of which can support up to six Sun Disk shelves. The figures below show a representative sample of stable, balanced and redundant cluster configurations with three HBAs, as well as steps to migrate from one state to another.

**NOTE:** Diagrams below are **not representative** of proper slot location for HBAs.



Cabling Diagrams

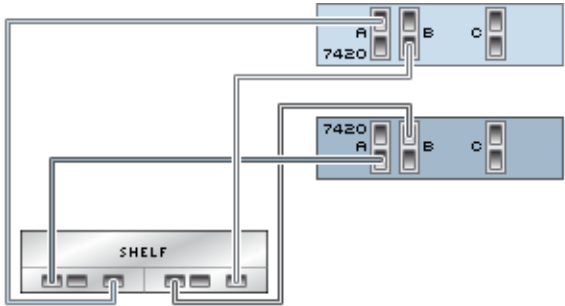
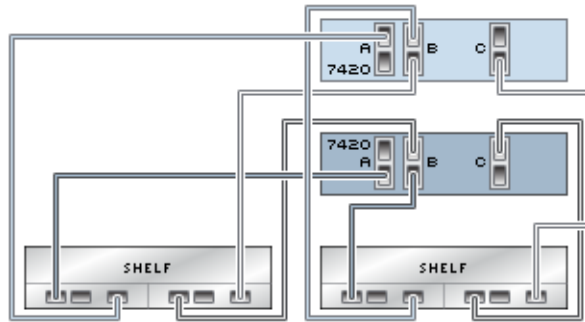
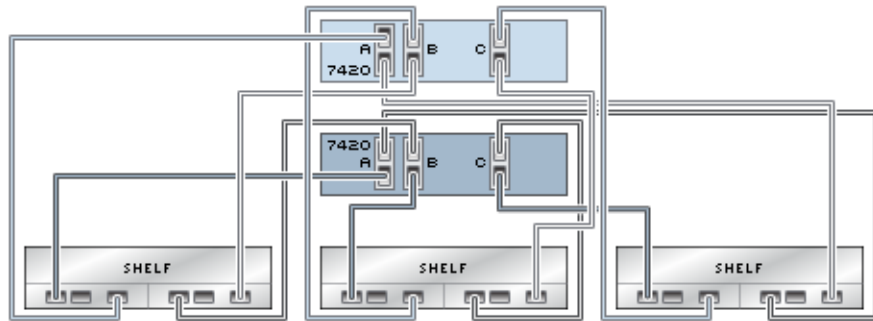


fig. 1 Sun ZFS Storage 7420 cluster with three HBAs and one Sun Disk shelf



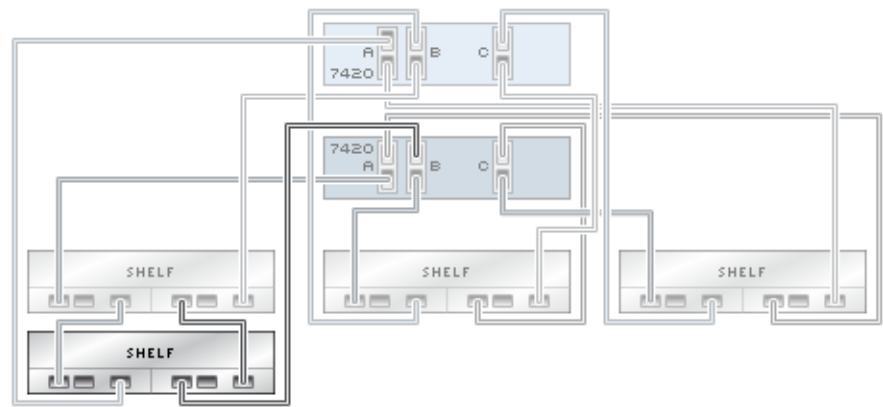
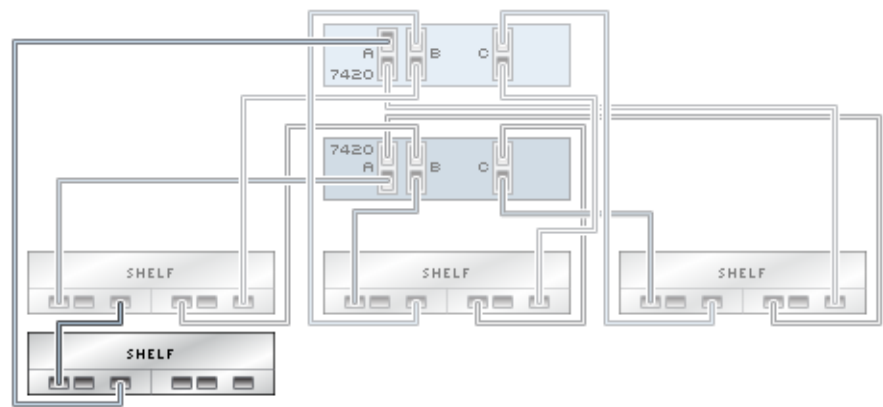


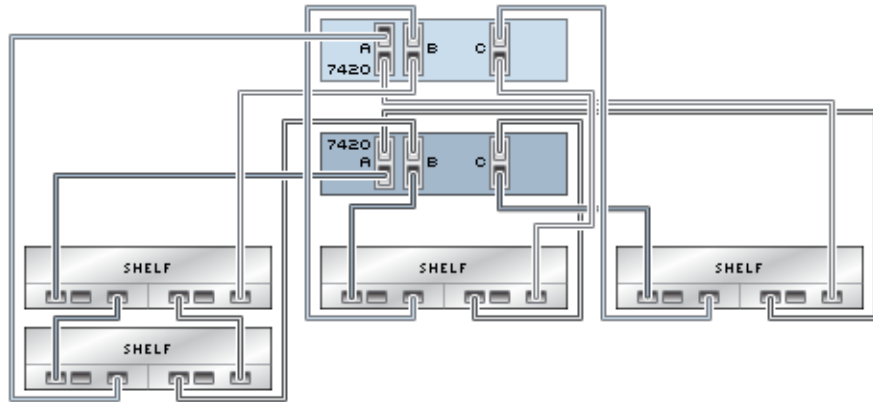
**fig. 2** Sun ZFS Storage 7420 cluster with three HBAs and two Sun Disk shelves



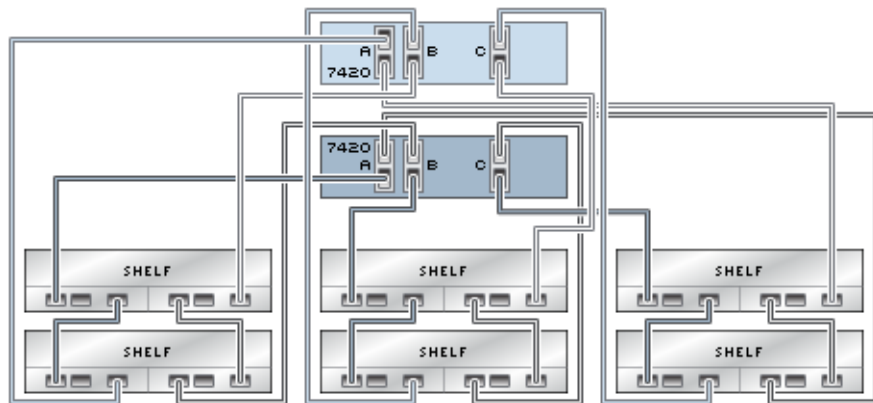
**fig. 3** Sun ZFS Storage 7420 cluster with three HBAs and three Sun Disk shelves



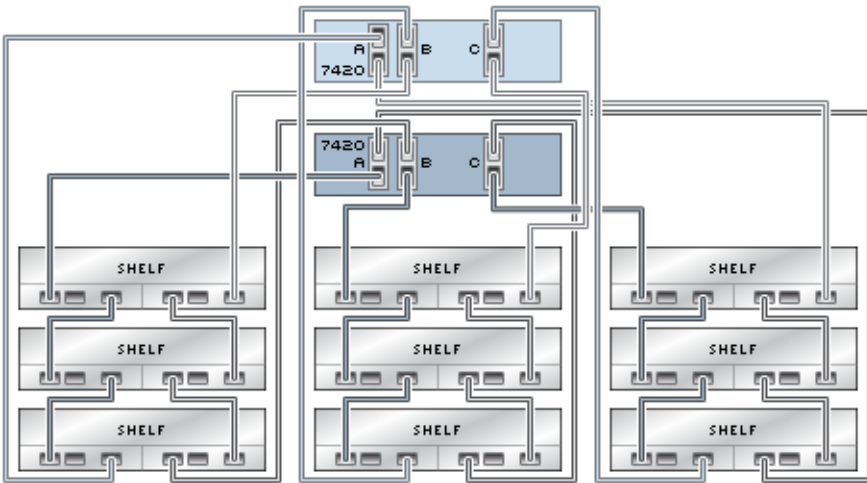




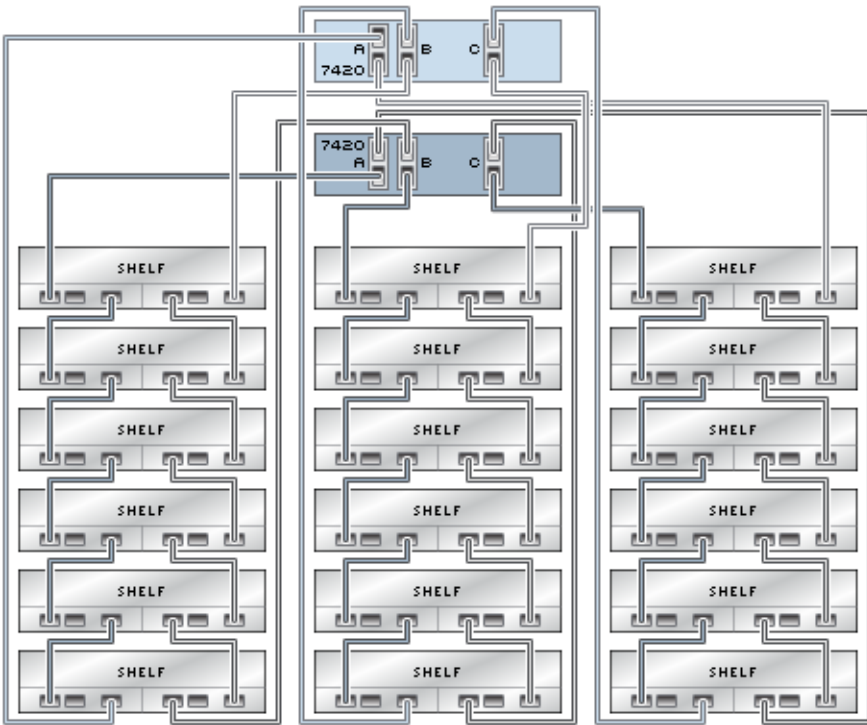
**fig. 4** Sun ZFS Storage 7420 cluster with three HBAs and four Sun Disk shelves



**fig. 5** Sun ZFS Storage 7420 cluster with three HBAs and six Sun Disk shelves



**fig. 6** Sun ZFS Storage 7420 cluster with three HBAs and nine Sun Disk shelves



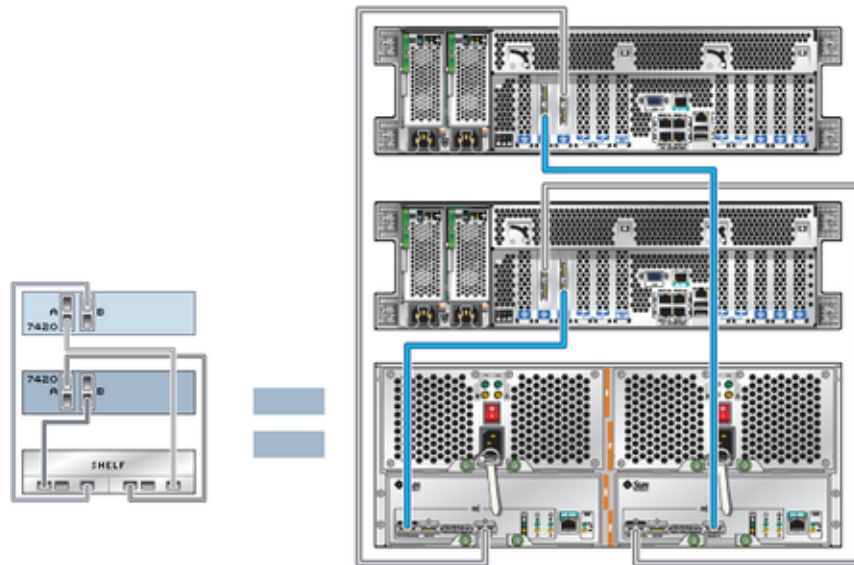
**fig. 7** Sun ZFS Storage 7420 cluster with three HBAs and eighteen Sun Disk shelves

## 7420 Cluster Cabling pt.3

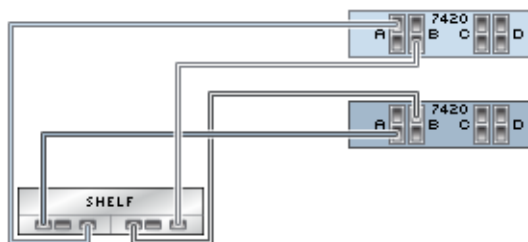
### Connecting Expansion Storage to the Sun Storage 7420 Cluster (4 HBAs)

The Sun ZFS Storage 7420 cluster is available with either two, three, or four HBA cards installed, each of which can support up to six Sun Disk shelves. The figures below show a representative sample of stable, balanced and redundant cluster configurations with four HBAs, as well as steps to migrate from one state to another.

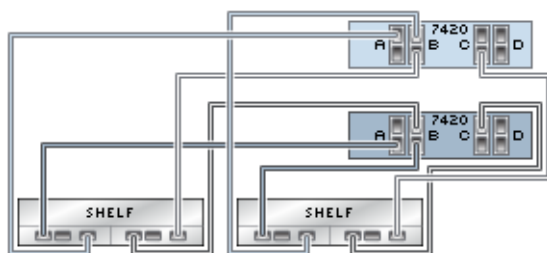
**NOTE:** Diagrams below are **not representative** of proper slot location for HBAs.



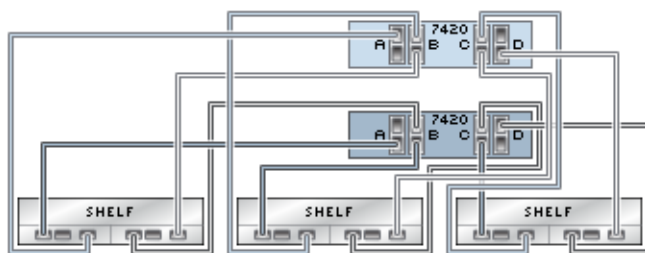
### Cabling Diagrams



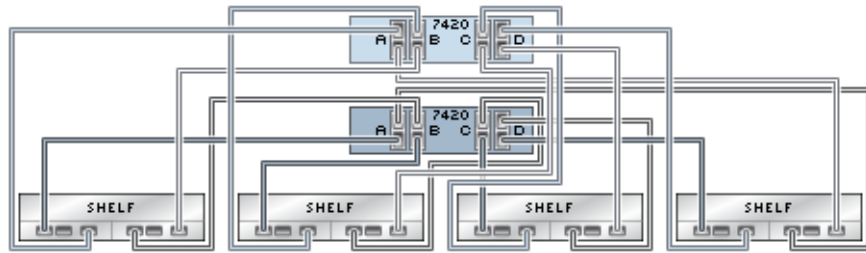
**fig. 1** Sun ZFS Storage 7420 cluster with four HBAs and one Sun Disk shelf



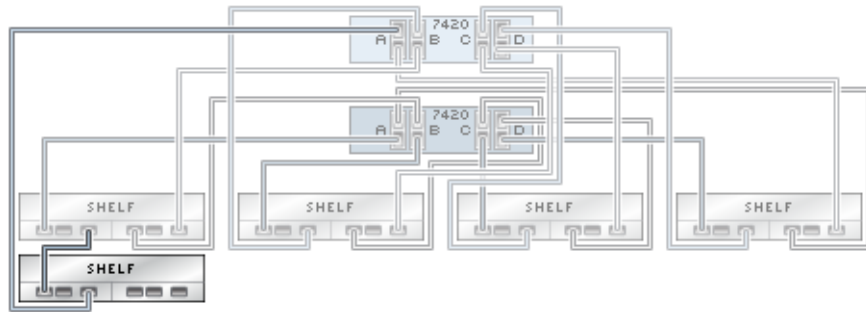
**fig. 2** Sun ZFS Storage 7420 cluster with four HBAs and two Sun Disk shelves

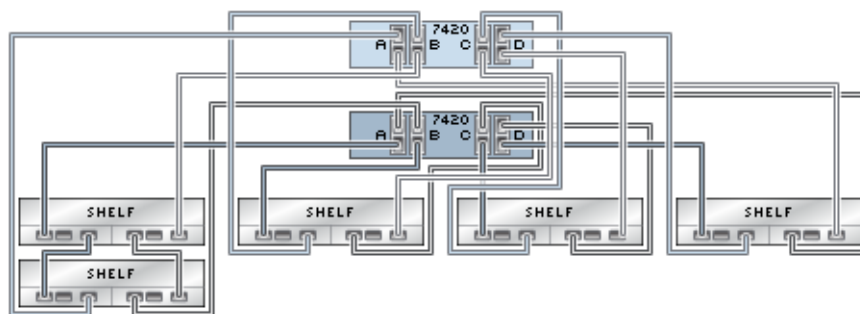
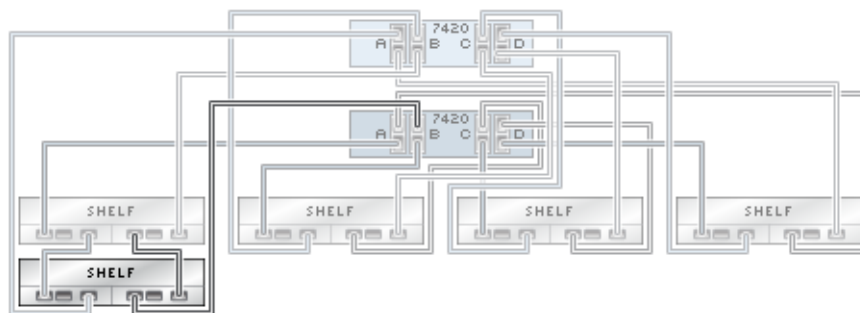


**fig. 3** Sun ZFS Storage 7420 cluster with four HBAs and three Sun Disk shelves

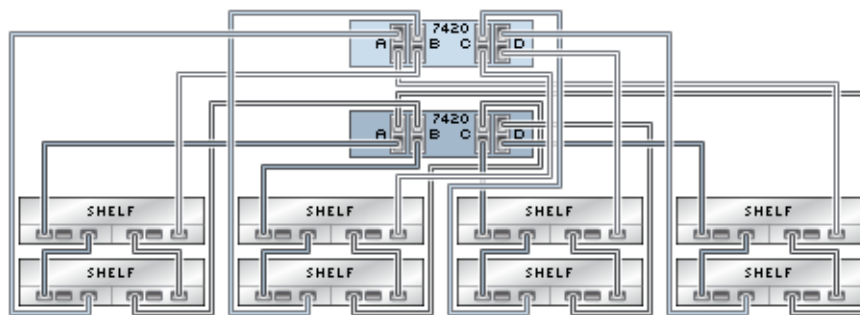


**fig. 4** Sun ZFS Storage 7420 cluster with four HBAs and four Sun Disk shelves



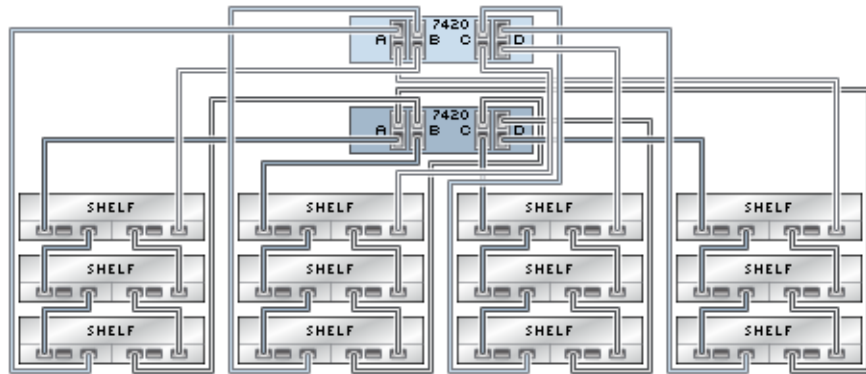


**fig. 5** Sun ZFS Storage 7420 cluster with four HBAs and four Sun Disk shelves

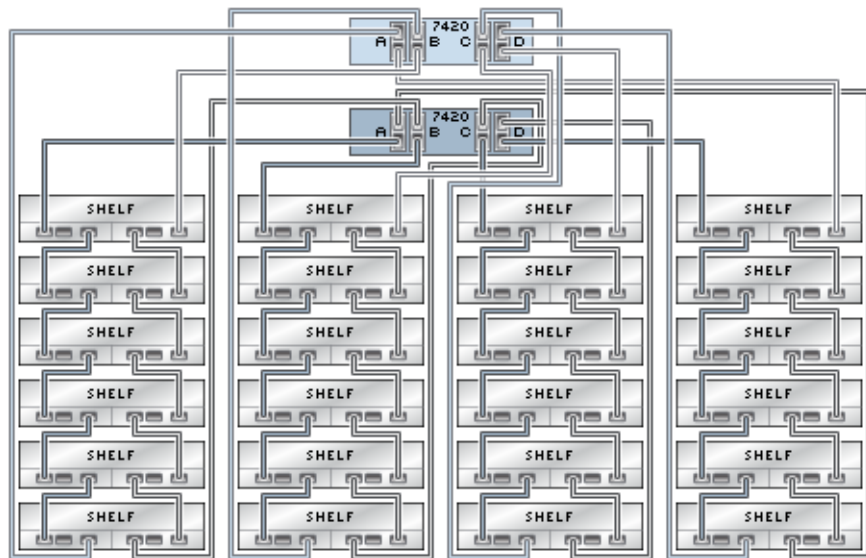


**fig. 6** Sun ZFS Storage 7420 cluster with four HBAs and eight Sun Disk shelves





**fig. 7** Sun ZFS Storage 7420 cluster with four HBAs and twelve Sun Disk shelves

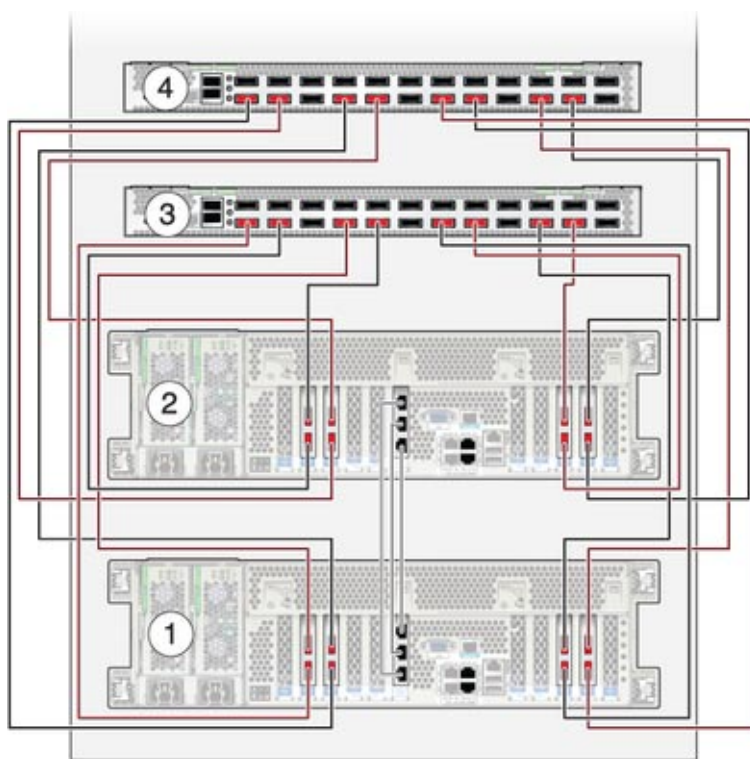


**fig. 8** Sun ZFS Storage 7420 cluster with four HBAs and twenty-four Sun Disk shelves

## 7700 Cabling

### Sun ZFS Storage 7700 SAS Cabling

The following illustration shows how SAS cabling is provided from the factory in the main cabinet.



**fig. 1** Sun ZFS Storage 7700 SAS and cluster cabling as shipped

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**Figure Legend**

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**1** System controller 0    **3** RCC 0

---

**2** System controller 1    **4** RCC 1

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# Powering On and Configuring the System

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## Power

### Powering On and Configuring the Appliance

This section provides instructions for configuring the primary network interface using the preinstalled Sun ZFS Storage 7000 command line interface (CLI). After you configure the primary interface, configure the remaining system parameters using the browser user interface (BUI) from any client on the same network.

#### Prerequisites

Refer to the [Installation](#) section for detailed instructions to install your system in the rack. Complete the system cabling according to the [Cabling Diagrams](#) section.

Gather the following information in preparation for configuring an Ethernet interface on the storage controller.

- IP address
- IP netmask
- Host name
- Domain Name Server (DNS) domain name
- DNS server IP address
- Default router IP address
- Password

If you will access the appliance through an administrative client, configure the administrative client with the following settings:

- 8N1: eight data bits, no parity, one stop bit
- 9600 baud
- Disable hardware flow control (CTS/RTS)

- Disable software flow control (XON/XOFF)

Refer to the Quick Setup poster that shipped with the product or the following sections in the *Sun ZFS Storage 7000 Appliance Service Manual* located on <http://wikis.sun.com/display/fishworks> (<http://wikis.sun.com/display/fishworks>) for an overview of your system controller.

- 7120 Overview
- 7320 Overview
- 7420/7720 Overview
- 7700 Overview

## Connecting to ILOM

In rare cases, faults associated with uncorrectable CPU errors are not diagnosable or displayed in the controller. These faults will be preserved by and observable on the ILOM. Connect to the server ILOM (Service Processor) on the server platform to diagnose hardware faults that do not appear in the BUI.

In a cluster environment, an ILOM connection should be made to each controller.

The server ILOM provides options for (i) network and (ii) serial port connectivity. Network connection is the preferred choice, as the ILOM serial port does not always allow adequate means of platform data collection.

**WARNING :** Failure to configure ILOM connectivity may lead to longer than necessary hardware fault diagnosis and resolution times.

## Tasks

### Power Tasks

#### ▼ Powering On the Appliance

You can access the system by connecting an administrative client to the serial management port on the controller. Alternatively, if there is a Dynamic Host Configuration Protocol (DHCP) server on the network, you can access the system by connecting the network management port to your network.

Note that if you are installing a cluster, configure only one controller initially. The software propagates the configuration to the peer controller during cluster initialization. After the cluster is initialized, you can administer the system from either storage controller. However, do not attempt initial configuration on both controllers independently. Refer to the Cluster documentation in the System Administration Guide located on <http://wikis.sun.com/display/fishworks> (<http://wikis.sun.com/display/fishworks>) for more information.

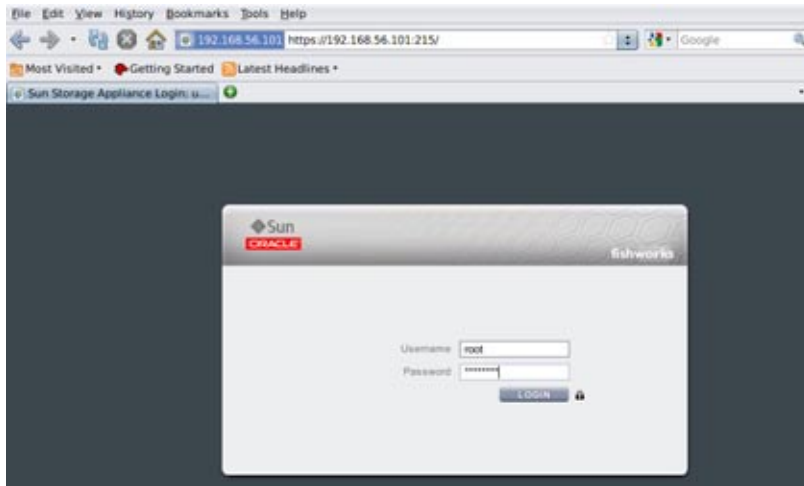
- 1 To perform initial configuration using serial, connect a serial cable from the SER MGT port on the back panel of the controller to the serial port on the administrative client. Use a DB9 to RJ45 adapter if necessary.
- 2 To perform initial configuration using Ethernet, connect an Ethernet cable from the NET MGT port on the back panel of the controller to your network.
- 3 Connect an Ethernet cable from your network to the NET0 port on the back panel of the controller.
- 4 For 7120, 7320 and 7420, power on any disk shelves attached to the storage system by plugging the two power cords into the universal power connectors, connecting the cords to the external power source and turning on the disk shelf power switches. Wait several minutes until the power indicators are lit a steady green.  
For 7700/7720, ensure that the circuit breakers are in the OFF position before connecting the six power cords for the storage rack to wall sockets that are controlled by individual circuit breakers. Connect three of the circuit breakers to one power source, and connect the remaining three to a different power source. This is required to maintain power protection through redundant power sources. See [Cabinet Electrical Specifications](#).
- 5 For 7120, 7320 and 7420, connect power cables to power supply 0 and power supply 1 on the storage controller(s) and wait until the Power/OK LED on the front panel next to the Power button lights and remains lit (approximately two minutes).  
For 7700/7720, switch all of the wall circuit breakers to the ON position. Wait until the Power/OK LEDs light and remain lit.
- 6 Open a terminal window or terminal emulator and issue the appropriate command, as follows:
- 7 For a serial port concentrator connect (for example, using telnet), and use root as the user name and replace *serial-concentrator portnumber* with the appropriate value, for example: `telnet serial-concentrator portnumber`
- 8 For a network connection, connect using SSH and use root as the user name and determine the IP address by accessing your DHCP server for the address assigned to the Service Processor MAC address (see the label on the storage controller), for example: `ssh root@192.168.128.256`
- 9 Type the password `changeme` when prompted.
- 10 At the command prompt, type `start /SP/console`.
- 11 Type `y` to confirm that you want to start the console.
- 12 Press any key to begin configuring the appliance. The shell interface configuration screen appears. NET-0 at the top of the screen should be underlined.

- 13 Verify the information on the screen, or enter values that do not appear.
- 14 Apply the values by pressing ESC-1 or the F1 key or by pressing Enter after confirming the password. The final shell configuration screen appears, confirming that your appliance is ready for further configuration using the BUI.

## ▼ Completing Configuration

Configure the remaining system parameters through the CLI after logging in, or through a browser running on any client on the same network as the initial interface. The management software is designed to be fully featured and functional on the following supported web browsers: Firefox 3.x, Internet Explorer 7, Internet Explorer 8, Safari 3.1 or later, and WebKit 525.13 or later.

- 1 Direct your browser to the system using either the IP address or host name you assigned to the NET0 port as follows: `https://ipaddress:215` or `https://hostname:215`. The login screen appears.



- 2 Type root into the Username field and the administrative password that you entered into the appliance shell kit interface and press the Enter key. The Welcome screen appears.
- 3 To begin configuring the system, click Start on the Welcome screen. You are guided through the Initial Configuration of the remaining network interfaces, DNS, time settings, directory service and storage.

## Next Steps

- [Initial Configuration](#)

# Initial

## Initial Configuration

The initial configuration consists of six configuration steps.

1. Network
2. DNS
3. Time
4. Name Services (NIS, LDAP, Active Directory)
5. Storage
6. Registration & Support

## Prerequisites

The initial configuration of the system is conducted after powering it on for the first time and establishing a connection, as documented in the [Installation](http://wikis.sun.com/display/fishworks/Documentation) section, also available as a PDF on <http://wikis.sun.com/display/fishworks/Documentation>. (<http://wikis.sun.com/display/fishworks/Documentation>.)

**Note** that the option to perform initial configuration of a cluster is only available in the BUI. If electing this option, read the clustering documentation included in the *Sun ZFS Storage 7000 Administration Guide* at <http://wikis.sun.com/display/fishworks> (<http://wikis.sun.com/display/fishworks>) before beginning initial configuration for detailed additional steps that are required for successful cluster setup. Pay careful attention to the Clustering Considerations for Networking section. Alternatively, cluster-capable appliances may be initially configured for standalone operation using the following procedure, and re-configured for cluster operation at a later time.

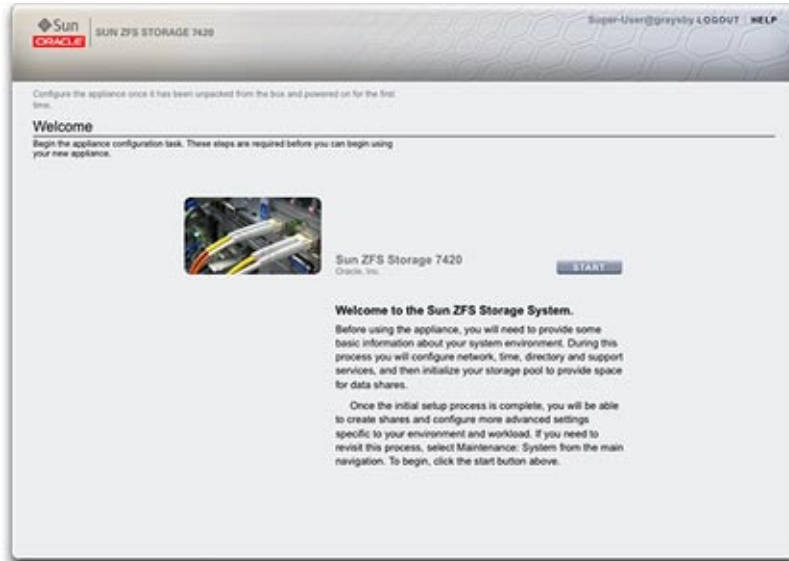
## Summary

This procedure will configure networking connectivity, several client network services, and the layout of the storage pool for standalone operation. When completed, the appliance is ready for use - but will not have any shares configured for remote clients to access. To create shares or revisit settings, refer to the Shares and Configuration sections of the Sun ZFS Storage 7000 System Administration Guide on <http://wikis.sun.com/display/fishworks>. (<http://wikis.sun.com/display/fishworks>.)

This procedure may be repeated at a later time by clicking the "INITIAL SETUP" button on the Maintenance > System screen or by entering the maintenance system setup context in the CLI.

## BUI

The BUI initial configuration is the preferred method and provides a screen for each of the initial configuration steps.



Click Start to begin basic configuration of network, time directory and support services. Click Commit to save the configuration and go to the next screen. Arrows beneath the Commit button can be used to revisit previous steps, and change the configuration if desired.

## Configuring Management Port

All standalone controllers should have at least one NIC port configured as a management interface. Select the Allow Admin option in the BUI to enable BUI connections on port 215 and CLI connections on ssh port 22.

All cluster installations should have at least one NIC port on each controller configured as a management interface as described above. In addition, the NIC instance number must be unique on each controller.

## CLI

Alternatively, use the CLI to step through the initial configuration sections. Each step begins by printing its help, which can be reprinted by typing `help`. Use the `done` command to complete each step.



## Performing Initial Configuration with the CLI

Login using the password you provided during [Installation](#):

```
caji console login: root
Password:
Last login: Sun Oct 19 02:55:31 on console
```

To setup your system, you will be taken through a series of steps; as the setup process advances to each step, the help message for that step will be displayed.

Press any key to begin initial configuration ...

In this example, the existing settings are checked (which were obtained from the DHCP server), and accepted by typing done. To customize them at this point, enter each context (datalinks, devices and interfaces) and type help to see available actions for that context. See the Network page for additional documentation or refer to the System Administration Guide at <http://wikis.sun.com/display/fishworks>. (<http://wikis.sun.com/display/fishworks>.) Pay careful attention to the Clustering Considerations for Networking section if you will configure clustering.

```
aksh: starting configuration with "net" ...
```

Configure Networking. Configure the appliance network interfaces. The first network interface has been configured for you, using the settings you provided at the serial console.

Subcommands that are valid in this context:

```

datalinks          => Manage datalinks

devices            => Manage devices

interfaces         => Manage interfaces

help [topic]       => Get context-sensitive help. If [topic] is specified,
                    it must be one of "builtins", "commands", "general",
                    "help" or "script".

show               => Show information pertinent to the current context

abort              => Abort this task (potentially resulting in a
                    misconfigured system)

done               => Finish operating on "net"
```

```
caji:maintenance system setup net> devices show
Devices:
```

DEVICE	UP	MAC	SPEED
nge0	true	0:14:4f:8d:59:aa	1000 Mbit/s
nge1	false	0:14:4f:8d:59:ab	0 Mbit/s
nge2	false	0:14:4f:8d:59:ac	0 Mbit/s
nge3	false	0:14:4f:8d:59:ad	0 Mbit/s

```
caji:maintenance system setup net> datalinks show  
Datalinks:
```

DATALINK	CLASS	LINKS	LABEL
nge0	device	nge0	Untitled Datalink

```
caji:maintenance system setup net> interfaces show  
Interfaces:
```

INTERFACE	STATE	CLASS	LINKS	ADDRS	LABEL
nge0	up	ip	nge0	192.168.2.80/22	Untitled Interface

```
caji:maintenance system setup net> done
```

Refer to the DNS section of the System Administration Guide at <http://wikis.sun.com/display/fishworks> (<http://wikis.sun.com/display/fishworks>) for additional documentation on DNS.

Configure DNS. Configure the Domain Name Service.

Subcommands that are valid in this context:

<code>help [topic]</code>	=> Get context-sensitive help. If [topic] is specified, it must be one of "builtins", "commands", "general", "help", "script" or "properties".
<code>show</code>	=> Show information pertinent to the current context
<code>commit</code>	=> Commit current state, including any changes
<code>abort</code>	=> Abort this task (potentially resulting in a misconfigured system)
<code>done</code>	=> Finish operating on "dns"
<code>get [prop]</code>	=> Get value for property [prop]. ("help properties" for valid properties.) If [prop] is not specified, returns values for all properties.
<code>set [prop]</code>	=> Set property [prop] to [value]. ("help properties" for valid properties.) For properties taking list values, [value] should be a comma-separated list of values.

```
caji:maintenance system setup dns> show  
Properties:
```

```
<status> = online  
domain = sun.com  
servers = 192.168.1.4
```

```
caji:maintenance system setup dns> set domain=sf.fishworks.com  
domain = sf.fishworks.com (uncommitted)  
caji:maintenance system setup dns> set servers=192.168.1.5  
servers = 192.168.1.5 (uncommitted)  
caji:maintenance system setup dns> commit  
caji:maintenance system setup dns> done  
aksh: done with "dns", advancing configuration to "ntp" ...
```

Configure Network Time Protocol (NTP) to synchronize the appliance time clock. See the NTP section of the System Administration Guide at <http://wikis.sun.com/display/fishworks> (<http://wikis.sun.com/display/fishworks>) for additional documentation.

Configure Time. Configure the Network Time Protocol.

Subcommands that are valid in this context:

<code>help [topic]</code>	=> Get context-sensitive help. If [topic] is specified, it must be one of "builtins", "commands", "general", "help", "script" or "properties".
<code>show</code>	=> Show information pertinent to the current context
<code>commit</code>	=> Commit current state, including any changes
<code>abort</code>	=> Abort this task (potentially resulting in a misconfigured system)
<code>done</code>	=> Finish operating on "ntp"
<code>enable</code>	=> Enable the ntp service
<code>disable</code>	=> Disable the ntp service
<code>get [prop]</code>	=> Get value for property [prop]. ("help properties" for valid properties.) If [prop] is not specified, returns values for all properties.
<code>set [prop]</code>	=> Set property [prop] to [value]. ("help properties" for valid properties.) For properties taking list values, [value] should be a comma-separated list of values.

```
caji:maintenance system setup ntp> set servers=0.pool.ntp.org
                        servers = 0.pool.ntp.org (uncommitted)
caji:maintenance system setup ntp> commit
caji:maintenance system setup ntp> done
aksh: done with "ntp", advancing configuration to "directory" ...
```

Refer to the NIS, LDAP and Active Directory sections of the System Administration Guide at <http://wikis.sun.com/display/fishworks> (<http://wikis.sun.com/display/fishworks>) for additional documentation.

Configure Name Services. Configure directory services for users and groups. You can configure and enable each directory service independently, and you can configure more than one directory service.

Subcommands that are valid in this context:

<code>nis</code>	=> Configure NIS
<code>ldap</code>	=> Configure LDAP
<code>ad</code>	=> Configure Active Directory

```
help [topic]          => Get context-sensitive help. If [topic] is specified,
                        it must be one of "builtins", "commands", "general",
                        "help" or "script".

show                  => Show information pertinent to the current context

abort                 => Abort this task (potentially resulting in a
                        misconfigured system)

done                  => Finish operating on "directory"

caji:maintenance system setup directory> nis
caji:maintenance system setup directory nis> show
Properties:
    <status> = online
    domain = sun.com
    broadcast = true
    ypservers =

caji:maintenance system setup directory nis> set domain=fishworks
    domain = fishworks (uncommitted)
caji:maintenance system setup directory nis> commit
caji:maintenance system setup directory nis> done
caji:maintenance system setup directory> done
aksh: done with "directory", advancing configuration to "support" ...
```

Configure storage pools that are characterized by their underlying data redundancy, and provide space that is shared across all filesystems and LUNs. See the Storage section of the System Administration Guide at <http://wikis.sun.com/display/fishworks> (<http://wikis.sun.com/display/fishworks>) for additional documentation.

Configure Storage.

Subcommands that are valid in this context:

```
help [topic]          => Get context-sensitive help. If [topic] is specified,
                        it must be one of "builtins", "commands", "general",
                        "help", "script" or "properties".

show                  => Show information pertinent to the current context

commit               => Commit current state, including any changes

done                 => Finish operating on "storage"

config <pool>         => Configure the storage pool

unconfig             => Unconfigure the storage pool

add                  => Add additional storage to the storage pool

import               => Search for existing or destroyed pools to import

scrub <start|stop>    => Start or stop a scrub

get [prop]           => Get value for property [prop]. ("help properties"
                        for valid properties.) If [prop] is not specified,
```

```

                                returns values for all properties.

    set pool=[pool]           => Change current pool

caji:maintenance system setup storage> show
Properties:
    pool = pool-0
    status = online
    profile = mirror
    log_profile = -
    cache_profile = -
caji:maintenance system setup storage> done
aksh: done with "storage", advancing configuration to "support" ...

```

Refer to (Phone Home) for additional documentation of remote support configuration.

Remote Support. Register your appliance and configure remote monitoring.

Subcommands that are valid in this context:

```

tags                => Configure service tags

scrk                => Configure phone home

help [topic]        => Get context-sensitive help. If [topic] is specified,
                    it must be one of "builtins", "commands", "general",
                    "help" or "script".

show                => Show information pertinent to the current context

abort               => Abort this task (potentially resulting in a
                    misconfigured system)

done                => Finish operating on "support"

caji:maintenance system setup support> done
aksh: initial configuration complete!

```



# Glossary

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<b>7110</b>	Sun Storage 7110 Unified Storage System
<b>7120</b>	Sun ZFS Storage 7120
<b>7210</b>	Sun Storage 7210 Unified Storage System
<b>7310</b>	Sun Storage 7310 Unified Storage System
<b>7320</b>	Sun ZFS Storage 7320
<b>7410</b>	Sun Storage 7410 Unified Storage System
<b>7420</b>	Sun ZFS Storage 7420
<b>7720</b>	Sun ZFS Storage 7720
<b>Active Directory</b>	Microsoft Active Directory server
<b>Alerts</b>	Configurable log, email or SNMP trap events
<b>Analytics</b>	appliance feature for graphing real-time and historic performance statistics
<b>ARC</b>	Adaptive Replacement Cache
<b>BUI</b>	Browser User Interface
<b>CLI</b>	Command Line Interface
<b>Cluster</b>	Multiple heads connected to shared storage
<b>Controller</b>	See "Storage Controller"
<b>CPU</b>	Central Processing Unit
<b>CRU</b>	Customer Replaceable Component
<b>Dashboard</b>	appliance summary display of system health and activity
<b>Dataset</b>	the in-memory and on-disk data for a statistic from Analytics
<b>DIMM</b>	dual in-line memory module
<b>Disk Shelf</b>	the expansion storage shelf that is connected to the head node or storage controller
<b>DNS</b>	Domain Name Service

<b>DTrace</b>	a comprehensive dynamic tracing framework for troubleshooting kernel and application problems on production systems in real-time
<b>FC</b>	Fibre Channel
<b>FRU</b>	Field Replaceable Component
<b>FTP</b>	File Transfer Protocol
<b>GigE</b>	Gigabit Ethernet
<b>HBA</b>	Host Bus Adapter
<b>HCA</b>	Host Channel Adapter
<b>HDD</b>	Hard Disk Drive
<b>HTTP</b>	HyperText Transfer Protocol
<b>Hybrid Storage Pool</b>	combines disk, flash, and DRAM into a single coherent and seamless data store.
<b>Icons</b>	icons visible in the BUI
<b>iSCSI</b>	Internet Small Computer System Interface
<b>Kiosk</b>	a restricted BUI mode where a user may only view one specific screen
<b>L2ARC</b>	Level 2 Adaptive Replacement Cache
<b>LDAP</b>	Lightweight Directory Access Protocol
<b>LED</b>	light-emitting diode
<b>Logzilla</b>	write IOPS accelerator
<b>LUN</b>	Logical Unit
<b>Masthead</b>	top section of BUI screen
<b>Modal Dialog</b>	a new screen element for a specific function
<b>NFS</b>	Network File System
<b>NIC</b>	Network Interface Card
<b>NIS</b>	Network Information Service
<b>PCIe</b>	Peripheral Component Interconnect Express
<b>Pool</b>	provide storage space that is shared across all filesystems and LUNs
<b>Project</b>	a collection of shares
<b>PSU</b>	Power Supply Unit



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<b>QDR</b>	quad data rate
<b>Readzilla</b>	read-optimized flash SSD for the L2ARC
<b>Remote Replication</b>	replicating shares to another appliance
<b>Rollback</b>	reverts all of the system software and all of the metadata settings of the system back to their state just prior to applying an update
<b>SAS</b>	Serial Attached SCSI
<b>SAS-2</b>	Serial Attached SCSI 2.0
<b>SATA</b>	Serial ATA
<b>Schema</b>	configurable properties for shares
<b>Scripting</b>	automating CLI tasks
<b>Service</b>	appliance service software
<b>Share</b>	ZFS filesystem shared using data protocols
<b>SIM</b>	SAS Interface Module
<b>Snapshot</b>	an image of a share
<b>SSD</b>	Solid State Drive
<b>SSH</b>	Secure Shell
<b>Statistic</b>	a metric visible from Analytics
<b>Storage Controller</b>	the head node of the appliance
<b>Support Bundle</b>	auto-generated files containing system configuration information and core files for use by remote support in debugging system failures
<b>Title Bar</b>	local navigation and function section of BUI screen
<b>Updates</b>	software or firmware updates
<b>WebDAV</b>	Web based Distributed Authoring and Versioning
<b>ZFS</b>	on-disk data storage subsystem



# Index

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## **Numbers and Symbols**

### **7x20 Controllers**

- Installing Mounting Brackets on the Controller Chassis, 16–19
- Installing the Cable Management Assembly, 25–29
- Installing the Controller Chassis into the Rack Slide Rails, 19–25

## **C**

- Cabinet, Unpacking and Moving the Cabinet, 47–51

## **P**

### **Power**

- Completing Configuration, 94
- Powering On the Appliance, 92–94

## **S**

- Sun Disk Shelf, Installing the Sun Disk Shelf into the Rack Slide Rails, 31–34

